SOUVENIR

2nd International Conference

on

CURRENT DEVELOPMENT IN ENGINEERING AND TECHNOLOGY

(CCET-2023)

December 29-30, 2023

Organized By

Sanjeev Agrawal Global Educational (SAGE) University, Bhopal

Editors

Dr V K Jain

Dr Pinaki Ghosh

Dr Shruti Dixit

First Impression: 2023

Editors
Dr V K Jain, Vice-Chancellor, SAGE University, Bhopal
Dr Pinaki Ghosh, School of Advanced Computing, SAGE University, Bhopal
Dr Shruti Dixit, School of Engineering and Technology, SAGE University, Bhopal

Souvenir
2nd International Conference on Current Development in Engineering and Technology (CCET-2023)

ORGANISING COMMITTEE

Chief Patrons

Er Sanjeev Agrawal

Chancellor, SAGE University, Bhopal and Indore
CMD, The SAGE Group

Dr Prashant Jain

Pro-Chancellor, SAGE University, Bhopal and Indore

Ms Shivani Agrawal

Executive Director, SAGE University, Bhopal

Patron

Dr V K Jain

Vice-Chancellor, SAGE University, Bhopal

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Dr Pinaki Ghosh, *SAGE University, Bhopal*

Conference Chairs

Dr Mukesh Dixit, *SAGE University, Bhopal*

Dr Gourav Shrivastava, *SAGE University, Bhopal*

Conference Co-Chairs

Dr Shruti Dixit, *SAGE University, Bhopal*

Dr Kirti Jain, *SAGE University, Bhopal*

Organizing Committee Members

Dr Aditya Bhatt	Mr Nikhil Chaurasia	Mr Chandan Kumar	Ms Nivedita Singh
Dr T N Mishra	Mr Harsh Rathore	Mr Nitin Choudhary	Ms Aaradhna Soni
Mr Harendra Singh	Mr Rakesh Verma	Mr Jitendra Sisodia	Ms Shipra Swati
Mr Atesh Kumar	Ms Priyanka Gupta	Ms Medhavi Bhargava	Ms Vandana Patel

PROGRAM SCHEDULE

SAGE University Bhopal			
2nd International Conference (CCET-2023)			
Date: 29 Dec 2023			

TIMINGS	Program Flow		Venue	Coordinators
08:30 - 09:30	**Registration**		**Royal SAGE Hall Entrance**	Ms Medhavi Bhargava Mr Rakesh Verma Ms Vandana Patel
09:35 - 09:45	Inauguration, Lamp Lighting & Saraswati Vandana		**Royal SAGE Hall**	Dr Kirti Jain Dr Abhilasha Dwivedi Ms Shipra Swati Mr Chandan Kumar Mr Jitendra Sisodia Dr Priyanka Gupta (MOC) Ms Deepa Ayachit (MOC) Dr Aditya Bhatt (Discipline) Mr Atesh Kumar (Discipline)
09:45 - 09:55	**Welcome of Guests**			
	Chief Guest Dr Oksana Kirichok, Vice-Rector, Caspian University, Kazakhstan			
	Chancellor Sir/Pro Chancellor Sir/ED Mam			
	Guests of Honor Dr Sunil Kumar, VC, RGPV Bhopal			
	Dr V K Jain, Vice Chancellor SAGE University, Bhopal			
09:55 - 10:00	Virtual Tour of THE SAGE			
10:00 - 10:05	Welcome Address by Dr V K Jain			
10:05 - 10:10	Release of Souvenir			
10:10 - 10:30	**Award Ceremony**			
	Dr N S Choudhary (Life-time Achievement Award)			
	Mr Golok Kumar Simli (IT Leader Award)			
	Dr Lovneesh Chanana (IT Leader Award)			
	Mr Ayush Jain (Young Techpreneur Award)			
10:30 - 10:35	Address by Chancellor Sir/Pro Chancellor Sir/ED Mam			
10:35 - 10:40	Address by Guest of Honor			
10:40 - 10:50	Address by Chief Guest			
10:50 - 10:52	Memento presentation to Guest of Honor by VC sir			
10:52 - 10:55	Memento presentation to Chief Guest by Chancellor sir			
10:55 - 11:00	Vote of Thanks by Dr Pinaki Ghosh			
11:00 - 13:00 Keynotes	Dr Kelum Gamage Professor, University of Glasgow, Scottland			
	Mr Golok Kumar Simli CTO, Ministry of External Affairs, India			
	Dr Lovneesh Chanana Vice President, SAP, Singapore			
	Dr K M Bhurchandi Professor, VNIT, Nagpur			
13:00 - 14:00	**LUNCH**		**Cafeteria Royal SAGE Hall**	Mr Nikhil Chourasia Mr Harendra Singh Mr T N Mishra
14:00 - 17:00	**Parallel Sessions**			
	Track - 1 (CSE)	Dr Sanjay Silakari Dr Maya Ingle	Seminar Hall, F-Block	Dr Gourav Shrivastava Dr Kirti Jain
	Track - 2 (EC/EE)	Dr Shruti Suman	Lab 201, F-Block	Ms Aaradhana Soni
	Track - 3 (ME/CE)	Dr Prashant Baredar Dr K K Jain	Lab 202, F-Block	Mr Harsh Rathore Dr Aditya Bhatt
	PhD Thesis Presentation	Dr N S Choudhary Dr Prabhat Manocha Dr Himanshu Monga	Board Room, F-Block	Dr Pinaki Ghosh Dr Shruti Dixit
	Poster Presentation	Dr K M Bhurchandi Dr Deepak Tomar	Ground Floor, F-Block	Ms Nivedita Singh Ms Priyanka Gupta
	Project Presentation	Dr Umesh Kumar Singh Dr Somitra Sanadhya	Room 11, 12 & 13, F-Block	Mr Atesh Kumar Mr Harendra Singh
	Coding Competition	Mr Ayush Jain	Lab 102 & 203, F-Block	Mr Chandan Kumar Mr Rakesh Verma Mr Nitin Choudhary
17:00 - 17:30	High Tea		Board Room, F-Block	Mr Nikhil Chourasia Mr Harendra Singh Mr T N Mishra
18:00 - 19:30	**Cultural Programs**		**Royal SAGE Hall**	Ms Aaradhana Soni Ms Medhavi Bhargava
19:30 - 20:30	**Dinner**		**Cafeteria Royal SAGE Hall**	Mr Nikhil Chourasia Mr Harendra Singh Mr T N Mishra

	SAGE University Bhopal		
	2nd International Conference (CCET-2023)		
	Date: 30 Dec 2023		
TIMINGS	**Program Flow**	**Venue**	**Coordinators**
09:00 - 11:00 Keynotes	Dr Himanshu Monga Director, Govt Hydro Engg College, HP Dr Somitra Sanadhya Professor, IIT, Jpdhpur Mr Siddharth Trivedi Scientist 'F', DRDO, Bangalore Dr Prabhat Manocha Associate Dorector, IBM, South Asia	**Royal SAGE Hall**	Dr Abhilasha Dwivedi Ms Medhavi Bhargava Mr Jitendra Sisodia Ms Vandana Patel Dr Priyanka Gupta (MOC) Dr Aditya Bhatt (Discipline) Mr Atesh Kumar (Discipline)
	Valedictory		
11:30 - 11:35	**Welcome of Guests** **Chief Guest** Dr Bharat Sharan Singh, Chairman, MPPURC Chancellor Sir/Pro Chancellor Sir/ED Mam **Guest of Honor** Dr Sanjay Tiwari, VC, MP Bhoj Open University Dr. V. K. Jain, Vice Chancellor SAGE University, Bhopal	**Royal SAGE Hall**	Dr Gourav Shrivastava Dr Kirti Jain Dr Abhilasha Dwivedi Mr Chandan Kumar Ms Medhavi Bhargava Ms Shipra Swati Mr Jitendra Sisodia Ms Vandana Patel Dr Priyanka Gupta (MOC) Ms Ankita Singh (MOC) Mr Aditya Bhatt (Discipline) Mr Atesh Kumar (Discipline)
11:35 - 11:55	Feedback of participants		
11:55 - 12:00	Report of the Conference by Dr Mukesh Dixit		
12:00 - 12:45	Prize Distribution and Award Ceremony		
12:45 - 13:55	Address by Chancellor Sir/Pro Chancellor Sir/ED Mam		
12:55 - 13:05	Address by Guests of Honor		
13:05 - 13:15	Address by Chief Guest		
13:15 - 13:20	Memento presentation to Guest of Honor & Chief Guest		
13:20 - 13:25	Concluding remarks by Dr V K Jain, Vice Chancellor SUB		
13:25 - 13:30	Vote of Thanks by Dr Gourav Shrivastava		
13:30 - 14:30	**LUNCH**	**Cafeteria Royal SAGE Hall**	Mr Nikhil Chourasia Mr Harendra Singh Mr T N Mishra

ABOUT THE CONFERENCE

International Conference on Current development in Engineering and Technology (CCET−2023) is organized by SAGE University, Bhopal to address various issues to thrive the conception of intelligent solutions in future.

The scope of engineering and technology is as compelling as it is necessary. To remain on the incisive edge, one must be continually observant, when it comes to following up with the latest trends, distinguishing the most constraining challenges, or conducting their own research. The prime objective of this two−day conference is to bring experts, researchers and innovators from academia, R & D and industry working in the various fields of engineering & technology together and provide them a forum for knowing what is happening in the research arena, identifying and conceptualize new ideas and sharing their valuable findings and thoughts. The conference will also feature prominent keynote speakers to create research interest in the minds of young graduates to pursue research as their career. It will facilitate and promote interdisciplinary research among researchers and help in reducing the gaps between different disciplines. All accepted and presented papers will be included in CCET− 2023 Conference Proceedings and will be published to International Journal on Advances in Engineering, Technology and Science (IJAETS).

Dr. Pinaki Ghosh

(General Chair)

School of Advanced Computing

SAGE Univeristy, Bhopal

ACKNOWLEDGEMENT

MANGUBHAI PATEL
GOVERNOR, MADHYA PRADESH
BHOPAL - 462052

मंगुभाई पटेल
राज्यपाल, मध्यप्रदेश
भोपाल - 462052

क्रमांक 720/राजभवन/2023
भोपाल, दिनांक-24. नवंबर, 2023

संदेश

हर्ष का विषय है कि संजीव अग्रवाल ग्लोबल एजुकेशनल यूनिवर्सिटी, भोपाल द्वारा **करेन्ट डेवलपमेंट इन इंजीनियरिंग टेक्नोलॉजी** विषय पर द्वितीय कांफ्रेस का आयोजन किया जा रहा है।

उच्चशिक्षण संस्थाओं का यह दायित्व है कि समाज के वंचित और पिछड़े वर्ग के विकास से जुड़े विषयों में अनुसंधानात्मक प्रवृत्तियों का पोषण करे। प्रतिभाओं को उनके शोध अनुसंधान के प्रदर्शन का अवसर प्रदान करे। सैद्धांतिक विद्वता को व्यवहारिक क्रियान्वयन की पारस्परिकता और विनिमय का मंच उपलब्ध कराए।

आशा है, स्मारिका क्रांफेस के वैचारिक चिंतन और व्यवहारिक क्रियात्मकता के लिए हितधारकों के मध्य निरंतर संवाद विकास प्रक्रियाओं की प्राणवायु बनेगी।

शुभकामनाएं,

(मंगुभाई पटेल)

अखिल भारतीय तकनीकी शिक्षा परिषद्
(भारत सरकार का एक सांविधिक निकाय)
(शिक्षा मंत्रालय, भारत सरकार)
नेल्सन मंडेला मार्ग, वसंत कुंज, नई दिल्ली–110070
दूरभाष : 011–26131498
ई–मेल : chairman@aicte-india.org

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(A STATUTORY BODY OF THE GOVT. OF INDIA)
(Ministry of Education, Govt. of India)
Nelson Mandela Marg, Vasant Kunj, New Delhi-110070
Phone : 011-26131498
E-mail : chairman@aicte-india.org
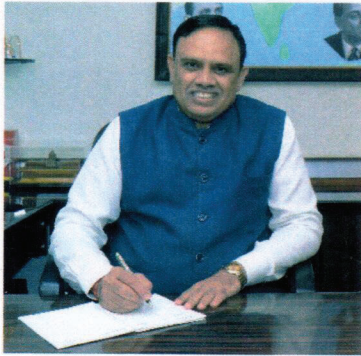
Message

I am delighted to extend my warmest greetings and heartfelt appreciation to Sanjeev Agrawal Global Educational (SAGE) University, Bhopal is organizing "2nd International Conference on Current Development in Engineering and Technology (CCET-2023)" to be held on 29th -30th December, 2023.

In the ever-evolving landscape of engineering and technology, conferences such as these play a pivotal role in shaping the trajectory of our collective future. This event brings together brilliant minds, thought leaders, and pioneers, creating a forum for the exchange of ideas and the exploration of cutting-edge advancements.

As we embark on this intellectual journey, I encourage each participant to actively engage in discussions, forge new collaborations, and contribute to the wealth of knowledge that will undoubtedly emerge from our collective endeavors. The intersection of ideas and expertise at this conference has the power to drive innovation, inspire breakthroughs, and pave the way for a future defined by technological excellence.

May this conference be a catalyst for transformative ideas, enduring connections, and ground-breaking solutions.

Best Wishes.

(Prof. T.G. Sitharam)

प्रो. भरत शरण सिंह
M sc. Ph.d. FZSI
सभापति

अर्धशासकीय पत्र क्र. 53   दिनांक 04.12.2023

Message

I am happy to hear that Sanjeev Agrawal Global Educational (SAGE) University Bhopal, is arranging an International Conference titled **"Current Developments in Engineering & Technology (CCET-2023)"** scheduled for December 29th-30th, 2023.

I believe this conference will serve as a hub of knowledge, fostering collaboration and insightful discussions across diverse perspectives in Engineering and Technologies. Participants stand to gain exposure by sharing their research, ensuring two days of discovery, innovation, and lasting connections.

I extend my heartfelt best wishes to SAGE University, the organizers of the conference, and all participants for a prosperous and impactful event. May the conference be a resounding success!

(Dr. Bharat Sharan Singh)

Chairman, MPPURC

Dr. Anil Kothari
डॉ. अनिल कोठारी
Director General
महानिदेशक

No. 636 /CST/DG/MSG/2023   December 05, 2023

MESSAGE

I am glad to know that Sanjeev Agrawal Global Educational (SAGE) University, Bhopal is organizing an International Conference on **"Current Developments in Engineering & Technology (CCET-2023)"** on 29th - 30th December, 2023.

I firmly believe that this conference has the potential to serve as a guiding light of knowledge, bringing together a wide array of perspectives to foster insightful discussions and collaborative learning. Attendees are certain to gain valuable exposure by presenting their research and sharing expertise in the dynamic realm of Engineering and Technologies. The two-day event promises a rich experience, characterized by exploration, innovation, and the establishment of enduring connections.

I wish all the best for the successful and remarkable organization of this international conference at SAGE University, Bhopal.

(Dr. Anil Kothari)

Prof. Sunil Kumar
Vice-Chancellor

Do Letter No. *RGPV/VCO/2023/155*

Date *05·12·2023*

Message

Congratulations to **Sanjeev Agrawal Global Educational (SAGE) University, Bhopal** for hosting the International Conference on **"current developments in Engineering & Technology (CCET-2023)"** on 29th-30th December, 2023.

May this conference spark innovative ideas, fruitful collaboration and advance knowledge. Participants will gain exposure by sharing their research, ensuring two days of discovery, innovation, and lasting connections.

As academician, our objective should be to create an institution par excellence with innovative concepts for imparting quality education and enable our students to serve the society better. I must say that the Institute is using its expertise as a driver for continual improvement of the technical education.

Sending my best wishes to SAGE University Bhopal for orchestrating a dynamic and enlightening experience in the academic community through this successful international conference.

(Prof. Sunil Kumar)

प्रो. एस.के. जैन
कुलपति

Prof. S.K. JAIN
Vice Chancellor

Ref. 3096/vc/2023

Date 05/12/2023

शुभकामना संदेश

यह जानकर अत्यंत प्रसन्नता हुई है कि संजीव अग्रवाल ग्लोबल एजुकेशनल **(SAGE)** यूनिवर्सिटी द्वारा दिनांक 29 एवं 30 दिसम्बर, 2023 को ''वर्तमान इंजीनियरिंग और प्रौद्योगिकी में विकास'' विषय पर द्वितीय अंतर्राष्ट्रीय सम्मेलन का आयोजन किया जा रहा है।

निश्चित ही सम्मेलन में भाग ले रहे अंतर्राष्ट्रीय एवं राष्ट्रीय स्तर के तकनीकी मार्गदर्शक, शोधकर्ताओं, संबंधित विषय विशेषज्ञ, शिक्षाविदों, उद्योगपतियों की उपस्थिति एवं उनके इस क्षेत्र में अर्जित किये गये अनुभवों से संबंधित छात्र-छात्रा, फेकल्टी, एवं विश्वविद्यालय लाभान्वित होगा। साथ ही भविष्य में इंजीनियरिंग एवं प्रौद्योगिकी के क्षेत्र में ओर भी बदलाव देखने को मिलेंगे जिसका का लाभ देश-विदेश की युवा पीढ़ी को होगा।

मैं, इस शुभ अवसर पर संजीव अग्रवाल ग्लोबल एजुकेशनल **(SAGE)** यूनिवर्सिटी भोपाल को एवं उपस्थित विषय-विशेषज्ञों, शोधकर्ताओं, मार्गदर्शकों शिक्षाविद्, उद्योगपतियों के साथ-साथ छात्र-छात्राओं एवं विश्वविद्यालय परिवार को इस सम्मेलन के सफल आयोजन की शुभकामनाएं एवं बधाईयॉ देता हूँ।

शुभकामनाओं सहित

(प्रो.एस.के.जैन)
कुलपति
बरकतउल्ला विश्वविद्यालय, भोपाल

प्रो.(डॉ.) संजय तिवारी
पी.एच.डी., पी.डी.एफ. (कैम्ब्रिज), एफ.आई.ई.टी.ई., सी.इंजी.,
एफ.आई.ई., सी.एम.आई.एल.एम., यू.एस. फुलब्राइट फेलो, एफ-यूकेरी

कुलपति

Prof.(Dr.) Sanjay Tiwari
Ph.D., PDF (Cambridge), FIETE, C.Engg.,
FIE, CMILM, US Fulbright Fellow, F-UKIERI
Vice Chancellor

मध्यप्रदेश भोज (मुक्त) विश्वविद्यालय
राजा भोज मार्ग (कोलार रोड), भोपाल-462 016 (म.प्र.) भारत

Madhya Pradesh Bhoj (Open) University
Raja Bhoj Marg (Kolar Road), Bhopal-462 016 (M.P.) INDIA

Date : November 29, 2023

Message

It gives me immense pleasure to know that **Sanjeev Agrawal Global Educational (SAGE) University, Bhopal** is organizing "**2nd International Conference on Current Development in Engineering and Technology (CCET-2023)**" on **29 – 30 December, 2023.** As Sage University has always been committed to fostering excellence in education, research, and technological innovation, I hope this International Conference serves as a testament to their dedication to providing a platform where ideas converge, knowledge is shared, and collaborative efforts flourish.

The field of engineering and technology is at the forefront of shaping the future, and your presence here reflects a shared commitment to pushing the boundaries of what is possible. In the next few days, I encourage you to engage in discussions, share your insights, and forge connections that transcend borders. The diversity of perspectives gathered here is a powerful catalyst for groundbreaking advancements.

As you come together to explore the latest developments in engineering and technology, let you also reflect on your collective responsibility to inspire the next generation of innovators. By fostering an environment of collaboration and knowledge exchange, you have to contribute to the continued growth of your respective institutions and, more importantly, the betterment of society at large.

I hope that this conference not only enhances your professional networks but also provides an opportunity to experience the vibrant academic community

I wish each of you a stimulating and fruitful conference experience. May the coming days be filled with inspiration, innovation, and the forging of lasting connections.

Prof. (Dr.) Sanjay Tiwari
Vice Chancellor

Er Sanjeev Agrawal

CMD, The SAGE Group
Chancellor, SAGE University

Message

It brings me immense joy to announce that SAGE University Bhopal is hosting the International Conference on "current developments in Engineering & Technology (CCET-2023)" on December 29th – 30th, 2023.

This conference promises to offer invaluable exposure to all participants, encompassing our esteemed faculty, dedicated research scholars, and eager students. It serves as a gateway to the forefront of technological advancements and the latest ongoing research in pertinent fields.

I applaud the unwavering dedication of the Organizing Committee, Technical Program Committee, Invited Session Organizers, Keynote Speakers and all contributors for their collective efforts in crafting an outstanding knowledge platform that spans a diverse array of cutting-edge topics.

I extend my heartfelt best wishes to all participants and delegates, anticipating a highly successful and impactful conference for everyone involved.

(Er Sanjeev Agrawal)

Dr V K Jain

Vice Chancellor,
SAGE University Bhopal

Message

I am delighted to share that SAGE University, Bhopal, is conducting an International Conference on "current developments in Engineering & Technology (CCET-2023)" on December 29th – 30th, 2023.

SAGE University Bhopal is committed to cultivating an atmosphere that sparks innovation and dynamic engagement among its students. Going beyond traditional teaching and research, the university proactively shares technical expertise and analytical resources with industries.

I take immense pride in anticipating that the conference will serve as an intellectual celebration of ideas, transforming training and development into an opportunity to lead the world through technological advancements.

My warm welcome to all delegates and participants, anticipating a highly rewarding experience at SAGE University, Bhopal.

(Dr V K Jain)

LIST OF GUESTS AND EXPERTS

Sr No	Name	Designation	Affiliation
1	Dr Bharat Sharan Singh	Chairman	MPPURC, Bhopal
2	Dr Kelum Gamage	Professor	Glasgow University, Scottland
3	Mr Golok Kumar Simli	CTO	Ministry External Affairs, India
4	Dr Lovneesh Chanana	Vice President	SAP, Singapore
5	Dr Prabhat Manocha	Associate Director	IBM, India
6	Dr N S Choudhary	Vice Chancellor	Assam Science and Technology University, Guwahati
7	Dr Sunil Kumar	Vice Chancellor	RGPV, Bhopal
8	Dr Sanjay Tiwari	Vice Chancellor	MP Bhoj Open University, Bhopal
9	Mr Siddharth Trivedi	Scientist 'F'	DRDO, Bengaluru
10	Dr Himanshu Monga	Director	Govt Hydro Engineering College, Bilaspur
11	Dr Umesh Kumar Singh	Director	ICS, Vikram Univeristy, Ujjain
12	Dr K M Bhurchandi	Professor	VNIT, Nagpur
13	Dr Somitra Sanadhya	Professor	IIT, Jodhpur
14	Mr Ayush Jain	CEO	Greendeck Technologies, Indore
15	Dr Maya Ingle	Professor	DAVV, indore
16	Dr Sanjay Silakari	Professor	UIT, RGPV, Bhopal
17	Dr Deepak Tomar	Head	MANIT, Bhopal
18	Dr Prashant Baredar	Head	MANIT, Bhopal
19	Dr K K Jain	Professor	NITTTR, Bhopal
20	Dr Shruti Suman	Associate Professor	PP Savani University, Dhamdod

Kelum Gamage

Professor, Glasgow University, Scottland

Prof. Kelum Gamage *(BSc, PhD, PgCAP, CEng, PFHEA, FIET, FRSA, SMIEEE)* is a Full Professor in the James Watt School of Engineering at the University of Glasgow and a winner of the *University of Glasgow Teaching Excellence Individual Award (2020/21)*. He is the Learning & Teaching Enhancement Officer of the College of Science and Engineering and the Co-Director of the Centre for Educational Development and Innovation. He is the co-founder and co-lead of the University of Glasgow Community of Practice for Sustainability in Learning and Teaching and also the lead of the AdvanceHe Sustainability in Learning and Teaching network. He is a member of the University Academic Standards Committee (ASC) and a member of the University Sustainability Working Group (SWG). Prof. Gamage holds the position of Visiting Professor at Sri Lanka Technological Campus (SLTC). He is an academic accreditor and Professional Registration Advisor (PRA) of the IET. Prof. Gamage is the Scotland member of the Advisory Group for the Engineering Subject Benchmark Statement (lead by the Quality Assurance Agency (QAA) for Higher Education) and also an assessor of the Designated Quality Body in England (DQB). He chairs the academic accreditation subcommittee of the Quality Assurance Committee (QAC) of the IET. He is the External Examiner for BEng/MEng Electrical and Electronic Engineering programmes, School of Computing, Engineering & Mathematics, University of Brighton; BEng/MEng Electronic Engineering programmes, Department of Engineering, Design and Mathematics at the Faculty of Environment and Technology, UWE Bristol. He is the lead editor of "The Wiley Handbook of Sustainability in Higher Education Learning and Teaching" (ISBN: 978-1-119-85283-4). Prof. Gamage is the Editor-in-Chief for the STEM Education Section of the Education Sciences Journal (Publisher: MDPI, Switzerland, ISSN 2227-7102). He is also an editorial board member of Humanities & Social Sciences Communications (Springer Nature, ISSN 2662-9992), The American Review of Education (American Society for Education), Radiation Protection and Dosimetry (Publisher: Oxford University Press) and Sensors (Publisher: MDPI, Switzerland, ISSN 1424-8220). Prof. Gamage is the lead guest editor of the Special Issues of Education Sciences (ISSN 2227-7102): "Editorial Board Members' Collection Series in "STEM Education""; "Reshaping Higher Education for a Post-COVID-19 World: Lessons Learned and Moving Forward"; "Learning for Sustainability: Challenges and Progress of Embedding Sustainability into Teaching and Learning and Beyond"; "COVID-2019 Impacts on Education Systems and Future of Higher Education". He is also the lead guest editor of the Special Issues of Sensors (ISSN 1424-8220), "Intelligent Radiation Detection Instrumentation and Measurement Techniques" and "Radiation Sensing: Design and Deployment of Sensors and Detectors".

Previously, Prof. Gamage worked as a Lecturer (from 2012 to 2017) and a Researcher/Associate Lecturer (from 2008 to 2011) in the Engineering Department at Lancaster University. Prior to 2008, he worked as a Lecturer at the Department of Electrical Engineering, University of Moratuwa, Sri Lanka and a Visiting Lecturer to the General Sir John Kotelawala Defence University (KDU) and the Institution of Engineers (IESL), Sri Lanka. He received his B.Sc. (Hons) degree in Electrical Engineering from the Department of Electrical Engineering, University of Moratuwa, Sri Lanka in 2007 and, PhD in Nuclear Engineering from the Engineering Department, Lancaster University (UK) in 2011.

Prof. Gamage has gained the highest level of professional recognition for teaching and supporting learning in higher education, becoming a Principal Fellow of the Higher Education Academy (PFHEA) (he became the first person to gain the Principal Fellow status within the College of Science and Engineering and 8th in the University of Glasgow). He is also a Chartered Engineer (CEng) of the Engineering Council (UK), a Fellow of the Institution of Engineering and Technology (FIET), a Fellow of the Royal Society of Arts (FRSA) and a Senior Member of the Institute of Electrical and Electronics Engineers (SMIEEE).

Mr Golok Kumar Simli

CTO, Ministry External Affairs, India

Shri Golok Kumar Simli is an award-winning Government Technology Leader whose contribution towards eGovernance and Digital Governance is remarkable and has been associated from the conceptualisation stage of National eGovernance Plan of India during 2005-06. His efforts towards digital transformation within public sectors is immense. He has architected and implemented the Passport Seva Programme for smooth delivery of Passport services at the doorstep of the citizen in India and Indian Diaspora globally, one of India's most successful eGovernace Programme. He is steering and contributing to the use of Emerging Technology and also guiding implementation of Cyber Security/Data and Information Security framework in the Government sectors. His keen areas of interest are Cloud, Big-Data, Advance Analytics, AI and IOT. He has written many articles in the usage of ICT in government sectors for service delivery transformation and spoken at various national and international seminars on Digital Transformation. Currently, Shri Golok is serving as the Chief Technology Officer, Passport Seva Programme, Ministry of External Affairs, Government of India. He carried a wide range of experience exceeding 28 years in ICT, starting with Private Sector, Public Sector Undertaking, Reserve Bank of India and more than 14 years with the Government. He is also advising the team for implementation of ePassport Project of External Affairs Ministry, Government of India. Shri Golok has received 17 individual awards to his credit including National eGovernance Gold Award from DARPG, Government of India. Some of the other eminent awards & accolades won by him are under - 1. Skoch Public Service Award 2021 - Going Beyond the Call of Duty. 2. 'Leadership Award in Digital Excellence 2021' from Governance Now 3. 'World CIO 200 Awards -Transformative Technology Leader 2021' chosen by Global CIO Forum Committee and is proudly bestowed with the title of LEGEND 4. 'Digital Excellence Awrad in Cloud Adoption and Enhancing Cyber Security - 2021' from APAC News Network 5. 'CIO Power-List 2020 & 2021' from Core Media Group 6. 'Could Innovation Award - 2021' Ed-Worth Media 7. 'Innovation Heros Award - 2020' from Dynamic CIO 8. Digital Icon Award-2019 from Indian Express Group 9. Amity Excellence Award for Technology Innovation and Leadership 2018 10. Dataquest Digital Leader-Technovator of the Year Awards 2018 11. 'SPECIAL ACHIEVEMENT AWARD", 2014-15, from former External Affairs Minister, Government of India, Smt. Sushma Swaraj 12. Business Impact Award 2014-15, from CIO & Leader, 9.9 Media House.

Dr Lovneesh Chanana

Sr Vice President and Head of Govt Affairs, SAP, Singapore

As Vice President for Government Affairs for Asia Pacific and Japan, Dr. Lovneesh Chanana is responsible for driving the public policy and thought leadership engagements for SAP with Government and other stakeholders. His domain of responsibilities covers engagements related to policies such as data governance, cloud, IoT, cyber security etc. and key programs in the region. He is also responsible for strategic public sector business support. Dr. Lovneesh brings more than twenty-six years of wide-ranging IT and consulting experience to the role, with a track record of strategic engagements on IT. He has handled multiple consulting and IT implementation projects. He has also been contributing to capacity building of Government officials and has designed and developed training programs on various areas related to Information and communication technologies in Government. He works closely with academia in facilitating a strong industry-academia connect. Before joining SAP, Dr. Lovneesh has held leadership positions with IBM, KPMG, EY and National Productivity Council of India. He holds a Ph.D. with research focus on mobile governance. He holds a bachelor and post graduate qualification in Industrial Engineering.

Dr Prabhat Manocha

Account Technical Leader, IBM India/South Asia

Dr. Prabhat Manocha has over 26 years of cross-industry experience and is focusing on IBM's Cognitive, Cloud, IOT and Blockchain Initiatives. He has been engaged in the conceptualization, conceive and delivery of complex business solutions based on multiple technologies. He has led strategy and positioning of IBMs Public Cloud with Government. He has also led the roll out of IBM career aligned certification courses via AP Skill Academy Portal covering ISA, Korea, ASEAN and ANZ. IBM AP Skills Academy platform offers comprehensive learning modules & Learning Management Systems with self-assessment, progress tracking, and other interactive tools. He has experience in managing international and multi-cultural teams. He has handled transformational e-Governance programs to support the IT initiatives focusing on solution priorities, growth strategy and key initiatives. He is a Global mentor and holds multiple technology certifications including the platinum level for Government Industry Insights & Solutions. He also holds the US patent on Interaction Neural Network for providing feedback between separate neural networks.

Dr N S Chaudhari

Vice Chancellor, Assam Science and Technology University ASTU

Prof Narendra S Chaudhary is Vice Chancellor, Assam Science and Technology University ASTU (Government of Assam), Guwahati from 2022 and Professor, Computer Science and Engineering (CSE), IIT Indore from 2009 till date. Before 2009, he was with Nanyang Technological University NTU, Singapore (Singapore Government University with QS world ranking (June 2022) as 19th position, and 3rd position in Asian University ranking) from 2001. Before 2001, he was Professor Computer Science (Software) with responsibility to train Scientists for DRDO, Ministry of Defense, Government of India from 1990. He was Director, Visvesvaraya National Institute of Technology VNIT Nagpur from 2013 to 2018 and Vice Chancellor, Uttarakhand Technical University UTU (State Government University of Uttarakhand, India) Dehradun from 2019 to 2021. Narendra had also been to Freie Universitat, Berlin (one of the four most prestigious universities in Germany and 18th in Europe with QS world ranking (June 2022) as 127th position), as well as to Nagoya Institute of Technology, Nagoya, Japan and Southern Cross University, Lismore, New South Wales, Australia for short academic assignments.

Narendra completed Ph.D., M.Tech. (Computer Science), and B.Tech. (Electrical Engineering EE, with distinction) from IIT Bombay. Narendra is an established researcher in Computer Science and Engineering with significant contributions in engineering education. His research contributions are in the areas of Machine Learning, Network Security and Mobile Computing, Novel Neural Network Models, Context Free Grammar Parsing, and Optimization. He has supervised 44 PhD students with more than 387 publications to his credit.

Narendra represented India in the years 2015 and 2016 as part of an academic delegation to Sweden, Belarus and P.R. China, accompanied by the Honorable President of India. In 2017, he visited Saint Petersburg Mining University, Russia, where he initiated academic collaborations with institutes in India. Narendra was also part of Federation of Indian Chamber of Commerce and Industry (FICCI)'s academic delegation to France, Germany and Netherlands.

Narendra is a senior member of IEEE (USA) as well as ACM (USA). He is Fellow and recipient of Eminent Engineer award (Computer Engineering) of the Institution of Engineers, India (IE-India), and Fellow of the Institution of Electronics and Telecommunication Engineers (IETE) (India). Narendra is President Indian Academy of Mathematics, Indore (India) from 2020 till date.

Dr Sunil Kumar

Vice Chancellor, RGPV Bhopal

Dr. Sunil Kumar, Vice Chancellor RGPV Bhopal, has been Additional Secretary of Technical Education Department in Madhya Pradesh Government. He has done M.Tech and PhD in Mechanical Engineering from IIT Delhi. The first appointment as Assistant Professor was in Rewa Engineering College, Department of Technical Education. After this, he has also been the Secretary and OSD in Madhya Pradesh Fee Regulatory Committee. Presently he was holding the charge of Vice Chancellor of RGPV. In 2017, he was made the Vice Chancellor for four years. Now he has again been handed over the command of the Vice Chancellor of the University.

Dr Sanjay Tiwari

Vice Chancellor, MP Bhoj Open University, Bhopal

Before assuming the charge as the Vice-Chancellor of was Professor & Head, School of Studies in Electronics & Photonics, Pt. Ravishankar Shukla University, Raipur. He was also the Head and Coordinator of Institute of Renewable Energy Technology & Management, Pt. Ravishankar Shukla University, Raipur (C.G.) and started Skill development course under NSDC. He has guided over 21 doctoral researchers and 89 M.Tech. Optoelectronics students. His research publications have received over 1100 citations during the last 18 years. Prof. Tiwari has held post-doctoral and visiting research professor positions in the University of Cambridge (U.K.), University of California and International Center of Theoretical Physics (Italy) and Distinguished Scientist at IBM, Almaden Research Lab, San Jose California. He also pursued CMI Level 5 Certificate in Leadership and Management from Charted Management Institute, Dudley college, UK. Prof. Tiwari is conferred with USIEF prestigious US Fulbright-Nehru Senior Research Fellowships, UK-India Education and Research Initiative (UKIERI) Fellowship and SAARC Fellowship. Dr. Tiwari is Senior Member IEEE, Senior Associate of Abdus Salam International Centre for Theoretical Physics Italy and Best Fulbright Alumni Awardee. He is Chartered Engineer & Fellow of Institution of Engineers & Fellow of Institution of Electronics & Telecom Engineers.

He is recipient of National UGC Research Award of University Grants Commission, New Delhi twice, Cambridge University Academic Fellow & UKIERI Award of British Council, Best Young Scientist Award MP for his research contributions. He has held position of Chairman of Central Board of Studies in Electronics, Higher Education Directorate, Govt. of Chhattisgarh, Board of Studies in Computer Science, Pt. Sunder Lal Sharma Open University, Bilaspur, and Departmental Research Committee, S.O.S. in Electronics & Photonics, Pt. Ravishankar Shukla University, Raipur (C.G.). He is a member of Board of Studies and DRC in various prestigious Universities such as Guru Ghasidas University, Bilaspur. Jammu University, Indira Kala Sangeet Vishwavidyalaya, Khiaragarh (C.G.), Pt. Ravishankar Shukla University, Raipur (C.G.), Rani Durgavati University, Jabalpur, Pt. S.N. Shukla University, Shahdol (M.P), Sambalpur University, Sambalpur, Central Board of Studies in Electronics Chhattisgarh, Chhattisgarh Swami Vivekanand Technical University, Bhilai and Pt. Sunder Lal Sharma Open University, Bilaspur. He is an also member of various prestigious academic bodies such AICTE CRO, Bhopal, Chairman, Institutional Innovation Council, Pt. Ravishankar Shukla University, Raipur (C.G.), Associate Member, Third World Academy for Women in Sciences Trieste, Italy, International Centre for Theoretical Physics Italy Indian Chapter, and Institution of Electronics & Telecommunication Engineers, Delhi,International Association of Engineers, Hongkong.

Siddharth Kumar Trivedi

Scientist-F, DRDO, Bengaluru

Siddharth Kumar Trivedi is working as a Scientist-F in Centre for AI and Robotics (CAIR) lab of DRDO, Ministry of Defence. He received his B.E from Bhopal University, and his M.E. from Mumbai University. He is a member of group involved in development of strategic command and control systems. He has been involved in the design and development of Secure Operating System for past 19 years. His primary interests are in the Trusted Computing Platforms, Separation Kernel and Multiple Independent Levels of Security. He has received various individual and group level awards in DRDO.

Dr. Himanshu Monga

Director, Govt Hydro Engineering College, Bilaspur, HP

Obtained PhD from Thapar Institute of Engineering and Technology, (TU) Department Of ECE, Patiala, Punjab, INDIA, in the field of Optical networks / coding and Wireless networks. I did my bachelor's degree in Electronics & Communication Engineering from Govt. Engineering College, Amravati University, Maharashtra, India and Master's degree in Electronics and Telecommunication Engineering & Master's degree in management in Human resource management. Presently I am working as Director cum Principal at Government Hydro Engineering College, Bilaspur (H.P) and earlier as Professor & Head (ECE) at Jawaharlal lal Nehru Government Engineering College, Sundernagar, Mandi (H.P). I was also having the charge of Dean Academics at JNGEC & OIC (Computer Centre). Earlier I worked as Director/Principal of Jan Nayak Chaudhary Devi Lal Vidyapeeth, Sirsa. Before this I served as Professor and Dean Research in Lovely Professional University, Phagwara, India. I possess work experience of 21 plus years in academics and industry/research.
I have authored more than 180 Research papers in international/national conferences. Have more than 45 Thomson Reuter SCI publications to my credit. I am the life member of IEEE, ISTE and reviewer of many renowned journals. I have authored 19 Books/ chapters in renowned publishing houses. I successfully completed 18 projects worth Rs 90 Lacks and successfully completed many consultancy projects. I have recently published Five (16) patents.

Dr. Umesh Kumar Singh

Director, ICS, Vikram University, Ujjain

He received MCA degree in Computer Applications from Samart Ashok Technological Institute (SATI), Vidisha in 1994 and the Ph.D. degree in Computer Science Engineering from Devi Ahilya University, Indore in 2006. From 1994 to 1996, he was an Engineer in CMC Ltd. (Govt. of India), New Delhi.. Since 1996, he is working with Vikram University, Ujjain and presently he is Professor in Computer Science and Dean in Faculty of Engineering Sciences. He has also served as Professor in Computer Science and Principal in Mahakal Institute of Technology (MIT), Ujjain since July, 2002 to June, 2006. He has also contributed as Director in Mahakal Institute of Management (MIM), MIT, Ujjain since September, 2004 to May, 2006. He has authored 8 books and his more than 170 research papers and 20 patents are published/granted in national and international journals of repute. He was awarded Young Scientist Award by M.P. council of Science and Technology, Bhopal for one of his research work on "Integrated Mailing System" in 1997. He is reviewer of many International Journals and International Conference proceedings. His research interest includes Computer Networks, Network Security, Internet & Web Technology.

Dr K M Bhurchandi

Professor, Visvesvaraya National Institute of Technology, Nagpur, Maharashtra

Kishor Bhurchandi did B. E. and M. E.(Electronics) from S G G S I E T, Nanded, Maharashtra in 1990 and 1992, Ph.D. from V R C E (VNIT) Nagpur in 2002. He has published more than 80 research papers including around 30 SCI indexed research papers and IEEE transactions. He has authored a book on Advanced Microprocessors and peripherals for McGraw Hill. Chinese translation of the book is available in China. He got the selected author recognition from McGraw Hill for selling around 4,50,000 copies of the book. He has got five patents published to his credit out of which two are awarded. He was Principal Investigator of three research Projects including one on Face recognition funded by BRNS and a center of excellence on 'COMMBEDDED SYSTEMS' a hybrid of communication and Embedded systems at VNIT Nagpur. He is currently a Professor at Department of Electronics and Communication Engineering at VNIT Nagpur. He is also coordinating the programs like Visvesvaraya Ph.D. Scheme and GIAN at VNIT worth around 20 Crores. He is chairing the committee for setting up a SIEMENS Center of Excellence on Advanced Technologies at VNIT worth Rs 188crores. He is also Chairman of the newly set up Center for Artificial and Machine Intelligence (CAMI) at VNIT worth INR 1 Crore. His areas of interest include Image processing and computer vision, wavelets, man machine interface, learning, Embedded Systems, Internet of things.

Dr Somitra Kumar Sanadhya

Professor, IIT Jodhpur, Rajasthan

Prof. Somitra Kumar Sanadhya is a Professor in the Department of Computer Science and Engineering, and the Dean for Digital transformation at IIT Jodhpur. Before moving to Jodhpur, he has served at IIT Ropar where he was Head of the department of Computer Science and Engineering for 2 years.
He completed B.Tech. degree from IIT Delhi, and Ph.D. from Indian Statistical Institute, Kolkata. His research interests include design, analysis, and efficient implementation of cryptographic algorithms and protocols.
He has been working with many Indian governmental agencies and corporations in the field of Cryptography and Cybersecurity. His research in various domains of Cybersecurity has allowed him to lead research and consultancy projects worth more than Rupees 7 crores. He has supervised 8 PhD thesis, and more than 20 Masters and Bachelor's thesis. Currently, he is advising 6 PhD students. He has published more than 60 peer reviewed journal and conference papers in reputed venues as IEEE Transactions on Information Theory, IEEE Transactions on Information Forensics and Security, ACM Transactions on Reconfigurable Technology and Systems, IEEE Transactions on Dependable and Secure Computing etc.
He has been a popular teacher and likes to teach courses in the domain of Cryptography, theoretical Computer Science, and Mathematics. He has received best instructor awards multiple times in the past.

Aayush Jain

CEO, Greendeck Technologies, Indore

Aayush Jain is Co-Founder & CEO at Greendeck which uses AI to help retailers increase their revenues by optimising their prices on a real-time basis. Greendeck has raised a total of $774.9K in funding over 2 rounds. Their latest funding was raised on Apr 10, 2019 from a seed round led by RLC Ventures. Greendeck was acquired by Quantive in 2022 in a multi-million deal - biggest in central India
Previously Aayush built TrueMD.in, an online pharmacy, and HealthOS.co, an API for healthcare developers with 800+ developers using the service. Both TrueMD and HealthOS were acquired by Tatwa Technologies in June 2017. Before TrueMD, he worked at Index & ETF Trading Desk at Credit Suisse, where he helped NY trading desk to manage risks and hedges for books having Index and ETF positions worth more than $2 Billion. Aayush holds a Bachelor of Engineering degree in Electrical and Electronics Engineering from Birla Institute of Technology and Science, Pilani, India.

Dr Maya Ingle

Professor, DAVV Indore

Presently, working as Professor/ Senior System Analyst, School of Computer Science and Information Technology, D.A. University for past 10 years, Dr Maya Ingle also worked as Dean, Student Welfare, Devi Ahilya University, Indore from Aug. 2006 to Sept. 2009. Her area of research includes Emotion Based Computing, Usability Engineering, Agile computing, Theoretical Computing, Algorithms, Statistical Natural Language Processing.
Around 28 years of Technical and Administrative experience. National Board Accreditatator since last 10 Years, Expert Member in UGC & AICTE, Expert Member in Selection Committees of Various Universities. She has been Invited as a speaker in many International Conferences at India & Abroad. Also, invited as the resourse person/Expert in Workshops and Faculty Development Programes, UGC sponsored Teachers Courses at National Level.

Dr Sanjay Silakari

Professor,, UIT, RGPV Bhopal

Sanjay Silakari is currently the Director of University Institute of Technology RGPV, a public institution located in Bhopal, India. The institution was established by the government of Madhya Pradesh with the name Government Engineering College (GEC). It is an autonomous institution as of 2010.
Sanjay Silakari is the Dean in faculty of CS/ IT and the chairman of board of studies, CSE, RGPV, Bhopal. He is also a professor and Head of Department of CSE in University Institute of Technology of RGPV. Dr. Silakari has more than two decades of teaching and administrative experience and has guided several students for their doctoral and master studies. He has several research publications to his credit in different reputed national and internal conferences and journals. His areas of interest include Network Security, Web Engineering, Web Personalization and Search Engines, Operating Systems, Computer Networks and E-Commerce. He is a life member of ISTE, CSI, IAENG and a member of IEEE and ACM. He is the author of book Basic Computer Engineering.

Dr Deepak Tomar

Head of Department, Computer Science and Engineering, MANIT, Bhopal

Dr Deepak Tomar is an Associate Professor and Head of Department of Computer Science and Engineering at Maulana Azad National Institute of Technology, Bhopal. He has done Ph.D (Computer Science and Engineering), M.Tech, and B.E. Computer Technology and has teaching experience of over 28 years with Specialization in Data Mining, Internet Technology, Computer & Network Security, Digital Forensics, and Machine Learning. He has published over 109 papers on various fields, some of his publications are - 56 Paper in International Journals, 15 Paper in the National Level Conference, 26 Paper in International Level Conference, 12 Book Chapters. He has membership of top professional bodies like IEEE, International Association of Computer Science and Information Technology (IACSIT), Computer Science Teachers Association (CSTA) –International Association of Engineers (IAENG), International Webmasters Association (IWA)

Dr Prashant Baredar

Head of Department, Mechanical Engineering, MANIT, Bhopal

Prashant Baredar is a professor and head in Energy Department, Maulana Azad National Institute of Technology (MANIT), Bhopal, India. He achieved his Ph.D. degree in Hybrid Energy System from Rajiv Gandhi Technological University Bhopal. Dr. Baredar has 20 years' experience in Mechanical Engineering. He is on the editorial board of many international journals. He has successfully organized five national seminars and conferences on Energy topic and delivered 25 expert lectures & invited talks. He has guided 6 PhD thesis and 42 M.Tech thesis. He has published one patent on reconfigurable mechanism for wind turbine blade. Dr. Baredar has published 102 research papers in national/international Journals and at conferences, and contributed to the books entitled Basic Mechanical Engineering, Practical Journal of Basic Mechanical Engineering, Renewable Energy sources and Practical Journal of Basic Civil Engineering& Engineering Mechanics.

Dr Shruti Suman

Associate Professor, PP Savani University, Dhamdod, Gujarat

Dr. Shruti Suman completed the B.E in Electronics & Communication Engineering, from Rajiv Gandhi Technical University, Bhopal, India, in the year 2010. She has completed M.Tech. and Ph.D. degrees in VLSI Design from Mody University of Science & Technology Lakshmangarh, Sikar, Rajsthan, India in year 2012 and 2018 respectively. She has more than 11 years of teaching experience along with intense research interest. After stepping into professional world, she started her career as Assistant Professor in ECE department, Mody University of Science & Technology, Rajasthan from October 2012 to October 2018; after that she joined as Associate Professor at K L University, Guntur, Andhra Pradesh, in the month of November 2018 till November 2023. Currently she is working as Associate Professor of the CSE department, P P Savani University, Surat, Gujrat since December 2023.

Her research interests include Low Power Digital and Analog VLSI Circuit Design, Mixed-Signal Circuits, Nanotechnology, IoT, Embedded Systems. She has more than 50 publications in International Journals and National/ International Conferences in the areas of high-performance integrated circuits and emerging semiconductor Technologies. She has edited 7 books and published/granted 6 Patents.

LIST OF THESES FOR AWARD

Use of Hybrid Nanofluids in Plate Heat Exchanger for Low Temperature Applications

Atul Bhattad

Indian Institute of Technology (Banaras Hindu University), Varanasi, UP

The plate heat exchangers are extensively utilized in many engineering applications because of their high thermal efficiency, compactness, flexibility and ease of sanitation. Their performance can be improved by changing the plate surfaces, providing corrugations, which generates turbulence in flow and enhances heat transfer coefficient and heat transfer rate. The performance can also be enhanced by using some advanced fluids instead of conventional fluids. Hybrid nanofluid is one of such pioneering heat transfer fluids, engineered by dispersing the mixture of nanoparticles (include metal oxides, metals and several allotropes of carbon). However, lot of work is still needed to take care of these issues. Hence, this thesis presents the theoretical, experimental and numerical investigations on heat transfer and pressure drop characteristics of hybrid nanofluids as cold/hot fluid in the plate heat exchanger.

Various water and brine-based alumina hybrid nanofluids have been prepared by two-step method and different thermo-physical properties have been measured. Heat transfer and pressure drop characteristics of plate heat exchanger have been investigated using different hybrid nanofluids as a coolant for 0.1 v% concentrations, flow rates (2.0, 2.5, 3.0, 3.5, and 4.0 lpm) and operating temperatures. Effects on different performance parameters such as heat transfer rate, heat transfer coefficient, pumping power, performance index, irreversibility and exergetic efficiency have been studied. Results confirm that hybrid nanofluids offer higher convective and overall heat transfer coefficients as well as heat transfer rate as compared to base fluid. It has been observed that a suspension containing nanoparticles with high thermal conductivity and low density show better performance as a coolant. Experiments on 0.1 v% concentrations of different alumina-water based hybrid nanofluids depict that silicon carbide hybrid shows maximum performance while CuO and titania hybrids show worst performances.

Computational Fluid Dynamics (CFD) based analysis has been performed to simulate the performance of the plate heat exchangers with MWCNT-alumina hybrid nanofluid at different concentrations and various flow rates considering the discrete phase model. The temperature distribution was discussed in the plate heat exchanger with and without hybrid nanofluids. CFD results suggest that considering hybrid nanofluid as a discrete phase gives good results under the considered assumptions. The result shows that the heat transfer rate, effectiveness and performance index enhance more by adding hybrid nanoparticles in the base fluid.

Two different case studies have been performed with various brines-based hybrid nanofluids in the plate heat exchangers for low temperature sectors. Energy, exergy and economic analyses have been performed to investigate various performance parameters. It has been observed that PG brine-based hybrid nanofluids provide better results followed by EG brine-based hybrid nanofluids in all the cases dealt. Hybrid nanofluids enhance performance and reduce the heat transfer area. Moreover, the hybrid nanofluids have not been found cost effective as the total annual cost is high and the payback period calculated is found more than the equipment life.

Computer Aided Interpretation of Bioelectric Signals

Shalini Sahay

MITS, Gwalior, MP

Today the death rates due to cardiac diseases have increased which become a major issue. The American Heart Association (AHA) has submitted report which states that cardiac disorder or failure causes death each year. The sudden cardiac arrest (SCA) is treated as medical emergency, as sometimes it does not get proper attention before reaching to the hospital. It is becoming more dangerous in India, as it requires more attention and awareness. Therefore, if proper information can be provided regarding any abnormality in the heart can be helpful in diagnosis. There are various methods are available to identify the risk of SCD in advance to give proper treatment. These methods can be divided in invasive or noninvasive. In invasive method patient is the Electrophysiology (EP).

Electrocardiogram (ECG) is a noninvasive method used for diagnosis of cardiovascular disorders. Electrocardiogram (ECG) is an important bioelectric signal that shows the electrical activities of the cardiac system. As ECG has become a routine part of any medical check-up, thus cardiac decisions can be made from its amplitude and morphology. It can be easily recorded by placing the surface electrodes on the body. It represents the physiology of the heart thus used to detect cardiac arrhythmia. When the muscles in heart contracts in unnatural way that is either faster or slower than the typical normal condition, then it can be called Cardiac arrhythmia. Some Cardiac arrhythmias are life-threatening restorative crises that can bring about heart failure and sudden passing away. So, it becomes very essential to give proper treatment. It became difficult for doctors to analyse a bulk of data for a short duration as sometimes eyes cannot detect the morphological changes occurs rapidly. Thus, an automatic computer aided analysis is required for detection of cardiac disorders.

As many researchers have reported many computers aided analysis based on features extracted from the ECG signals. Some features are based on time domain and frequency domain characteristics. It is very complicated to analyse the large variations in the changes of temporal and morphological parameters. This cardiac signal due to its amplitude, noise, and alterations occurs in the signal causes ECG signals processing is indispensable. For this, the signal is processed using wavelets, feature extraction, and classifications to identify the Cardiac Arrhythmia in a sensible fashion.

The atrial and ventricular contraction, and the atrial relaxations in ECG signal are indicated by P, QRS complex, and T waves. The analysis can be done using single or multi lead, where the single lead measurements are the most simple, and reliable in case of wearable and ambulatory ECG. The standard 12 leads record the signals of the heart from the different deviations which contains various information. It becomes more difficult for the analysis if the leads contain noise but the information can be retrieved from other leads. In this work single lead (V5 or MLII) are used which is   collected from MIT-BIH data base. Filters with high accuracy provide the answer for unpredictable and uncommon noises which might separate the noises gift in recordings so allows for process further. The electrocardiogram activity has Gaussian distribution which might be simply dissociable from different signals offered in traditional ECG recording. Thus, need for improvement is required for precise recordings of electrocardiogram signals (noise reduction, beat detection, etc.). Recently Single-Hidden-Layer Feedforward Neural Networks has been appealing attentions for its faster learning speed and enhanced generalized performance than those of traditional gradient-based learning algorithms. Pan-Tompkins algorithm is implemented for detection of heart disease as healthy or diseased case by detecting QRS duration and heart rate.

In this work, a hybrid learning algorithm is implemented to overcome the drawbacks of ELM (Extreme Learning Machine), where it uses an improved PSO algorithm. In order to achieve optimal FFFN, the enhanced PSO optimizes the input weights and hidden biases, the input to the FFNN could be a group of temporal components extracted from recorded signals. These parameters are optimized by PSO rule which may overwhelm the variation of record signals. It shows that the trained FFNN contains a distinctive structure for every subject. The performance analysis of the network based on the MIT-BIH cardiac arrhythmia database shows high classification accuracy and sensitivity.

Performance Enhancement of OFDM System for Multimedia and Wireless Applications

Isha Goel

Rayat Bahra University, Sahauran, Kharar, Punjab

Orthogonal frequency division multiplexing (OFDM) is used for wireless communications and is a multicarrier modulation scheme. So, for high-speed signal transmission frequency-selective fading networks, the OFDM technique is commonly used. Also, OFDM signals generally have time domain amplitude variation and have a wide range of dynamics due to their multicarrier nature, which referred to as PAPR.

In a normal OFDM system, a signal will pass through a high-power amplifier (HPA) which is nonlinear in nature and have a high PAPR. Due to this problem the signal will get clipped and results into further into my problems like an output degradation, out-of-band radiation, in-band distortion that need to be resolved for good results. For resolving the issue many techniques: Clipping, tone reservation and injection, non-linear companding, coding, selective mapping (SLM) and last partial transmit sequence (PTS), etc. is used in OFDM systems.

To address the problems associated with PTS technique that are the PAPR and the computational complexity reduction, this research introduces a three novel approaches. The approaches focused on the hybridization methods with help of PTS, Water-cycle optimization (WCO), Moth-flame optimization (MFO) and Water-cycle-moth-flame optimization (WCMFO). In first proposed algorithm PTS is combined with WCO and formed PTS-WCO algorithm technique. Similarly, PTS is combined with MFO and presented PTS-MFO algorithm technique and PTS is combined with WCO, MFO hybrid WCMFO and resulted into PTS-WCMFO algorithm technique.

All the proposed methods are being tested at different modulation, subcarriers that indicate their working capabilities at higher data rate. Also, they are compared with original OFDM system, previous hybrid optimization techniques and with each other's. After comparing it has been noted that all three work below 4 dB and the best of them is PTS-WCMFO with 1.97 dB PAPR value. In addition to PAPR all proposed algorithms computational complexity are calculated and 3000 is considered as a trade-off value between the peak to average power ratio (PAPR) and the amount of complexity in the proposed model.

Computational Aspects of Posed and Spontaneous Emotion Detection

Ritesh Joshi

Devi Ahilya Vishwavidyalaya, Indore, MP

Emotional exhibits are useful source of information about the emotional state of a subject. However, emotional expressions do not always correspond with an underlying emotional state. It is advantageous to be able to distinguish among emotional exhibits that are associated with the corresponding emotional state (spontaneous emotion) and those which are not associated with underlying emotions (posed emotion). Humans distinguish the duality in emotional exhibits relatively well and accurately but challenge lies in the computational aspect of distinguishing emotional duality. Posed emotions are significantly dissimilar from spontaneous counterpart in appearance, timing and duration, head and body movements and some other gestures. In past two decades enormous efforts have been invested in facial modality based posed and spontaneous emotion detection but seldom it has been explored using EEG modality. Here it is posited that neural signature obtained using Electroencephalogram (EEG) signals will be vital in distinguishing posed from spontaneous emotional exhibits. The statistical and wavelet-based features extraction approaches are most protuberant in EEG based emotion recognition systems. The emotion recognition methodologies work efficiently using classifiers Support Vector Machine (SVM) and Fuzzy-C-Means attaining 90% and 97.50% accuracy respectively. An efficient framework namely; EEG Frame used to extract feature vectors from EEG data and accumulates them for additional knowledge discovery. Several linear, nonlinear, time and frequency domain feature extraction methods are explored in EEG Frame. The positive and negative emotions are classified using established patterns of EEG signals extracted from frequency bands using graphical extreme learning machine. Higher beta and gamma activity is observed to be prevalent in temporal region for positive emotions whereas prefrontal region of the brain reflects higher alpha activity for negative emotions. Further, a Hybrid Adaptive Filtering and Higher Order Crossings (HAF-HOC) system recognizes emotions in user independent environment using Genetic algorithm. The EEG signals are decomposed into empirical mode and classification accuracy of 85.17% is gained using SVM.

An Investigation of Various Security Flaws in Internet of Things

Abhishek Raghuvanshi

Institute of Computer Science, Vikram University, Ujjain, MP

IoT is affecting each and every aspect of human life, since it is a woven combination of traditional system, sensors, cloud, mobile applications, web applications and control systems. IoT is a network of objects, where each object has unique identification as well as communication capabilities. The IOT has a wide range of real-world applications including - mining, oil, healthcare, smart cities, agriculture and transport industries. As per the results of industrial internet survey, conducted by world economic forum, around two-third of the respondents told that the biggest worry is interoperability and security. Most of IOT applications are web applications and many of them are vulnerable to certain attacks and threats like healthcare, smart cities, smart homes and other IOT applications also have Denial of Service and Man in the middle attack, as major threat to their security concerns.

Any potential remedy that may damage an advantage is a threat. Vulnerability is a weakness that conceives a danger. This may be the result of a bad scheme, installation botches or inadequate and uncertainty. An attack is a weakness-abusing or dangerous activity. In cases of assault, a claim is submitted or a system is flooded which seeks to refuse support.

Most of the IOT applications are web-based applications. The Inner-level security alludes to strategies for ensuring Web applications at the application layer, from pernicious assaults that may uncover private data. For the most part, the web structures are powerless against application-level assaults. The principal purpose behind this is website specialists verifiably trust approval rules which are upheld just on the customer side. Moreover, application-layer assaults are appealing to potential assailants, on the grounds that the data they look for eventually lives inside the application itself and it is simple for them to have an effect and arrive at their objectives. Lower layer helps application layer security. The IPSec gives security administrations at the IP layer by empowering a framework to choose the necessary security conventions.

Performance Improvement of Routing Protocol Through Congestion Control in Mobile Ad-Hoc Network

Navneet Kaur

UIT-RGPV, Bhopal, MP

Mobile ad-hoc network is a collection of nodes in which every node acts like a host as well as a router. Nodes move randomly and organize themselves arbitrarily. As a result, the network topology changes rapidly and unpredictably. Routing protocols are used for routing packets in ad-hoc networks. When a node receives data packet, it forwards it to the next-hop for a particular destination. This process continues until the packet reaches its destination. There are three types of routing protocols based on the routing information update mechanism employed i.e. reactive protocol (on demand), proactive protocol (table driven) and hybrid protocol. In terms of performance, reactive protocols display considerable bandwidth, computational cost and overhead advantages over proactive protocols. Compared with other reactive routing protocols, ad hoc on demand Distance Vector routing protocol (AODV), has a better performance and offers quick adaptation to dynamic link conditions, low processing delay, low memory overheads, and low network utilization.

Design of routing protocols in wireless ad hoc networks is a challenging task due to multi-hop communication, node mobility, limited bandwidth and constrained battery power. The one of the important issues in this network is congestion. Network congestion occurs when the total demand for a resource, e.g. link bandwidth, exceeds the capacity of the resource. This result in high packet loss, increase in delay and reduced network throughput. Researchers have developed various congestion control techniques but some factors are not focused which has resulted in additional complexity, energy utilization and overhead at routers. This thesis developed a new methodology for congestion control in the network which enhances the system performance by reducing the data access latency and energy consumption by nodes.

Computational Investigations in Solving Sudoku Puzzles

Deepika Rai

Devi Ahilya Vishwavidyalaya, Indore, MP

In theoretical computer science, Sudoku puzzle has always grappled its importance since it is an NP Complete (NPC) problem. Millions of researchers have been putting efforts in this field to design an efficient algorithm for solving Sudoku puzzle. It has been observed that various features of genetic algorithm are analyzed using Sudoku puzzle including a multistage genetic algorithm providing better solution in each stage. Sudoku puzzle can be considered as a constraint satisfaction problem for its solution. Also, a hybrid search approach has been applied to solve Sudoku puzzle that included constraint programming in local search framework. Moreover, a basic tabu search method has been integrated with Arc-Consistency-3 (AC3) algorithm that reduced the search space and solved many hard Sudoku puzzles. Various optimization techniques have also been applied for the selection of best candidate for a Sudoku cell. Some of these are quantum simulated annealing, cultural genetic algorithm, repulsive particle swarm optimization, hybrid genetic algorithm and simulated annealing, bee colony optimization etc.

A large number of applications of solving Sudoku puzzle are witnessed in the fields of steganography, secret image sharing, encrypting SMS, digital watermarking, image authentication, image encryption and many others. Additionally, Sudoku solving methods have also been advantageous for the generation of key pool in Advance Encryption Standard (AES) as well as proper key selection in encryption process. Since solving Sudoku puzzle of size (n×n) is an NPC problem, most of the existing algorithms are exponential for large instances of Sudoku puzzle. Determining effective solutions to any NPC problem has always been an important research problem as it provides some contributions to solve one-million-dollar question P vs NP.

Investigating Electroencephalogram (EEG) Based Emotion Recognition Techniques

Leena Bhole

Devi Ahilya Wishwavidyalaya, Indore, MP

Electroencephalogram based emotion recognition has become a prevalent exploration due to its widespread applications. It attempts to detect human emotions using spontaneous EEG signals generated from central nervous system. In this thesis, we have proposed EEG based emotion recognition approaches using linear, nonlinear and frequency domain features of EEG signals.

The primary purpose of this research is to design system architecture to recognize human emotions using EEG signals. We have presented various aspects including relation between emotion and brain, overview of EEG, research objectives of proposed work, and overview of proposed architecture designed to obtain the objectives. We have suggested system architecture Nonlinear Features based Emotion Recognition (NPER) using Detrended Fluctuation Analysis (DFA) and Hurst exponent for recognizing human emotions. DFA is a scaling analysis method used to compute correlation properties of EEG signals whereas Hurst exponent is responsible to find the self-similarity of EEG signals in time domain. Further, we have used these nonlinear features to compare the performance of three classifiers namely; Support Vector Machine (SVM), k-Nearest Neighbor (k-NN), and bagged trees for emotion recognition. In order to measure the performance of these classifiers, four performance parameters such as Accuracy (ACC), Sensitivity (SEN), Specificity (SPC), and Precision (PRE) have been used. The performance of aforementioned classifiers is analyzed in frontal, parietal, temporal, and combined regions of brain. The best value as 1.0 for all four measures is achieved using SVM for Hurst exponent in Fear emotion stating that SVM performs the best in combined region case. It is observed that DFA and Hurst features facilitate researchers to analyse non-stationary EEG signals for emotion recognition. However, incorporation of other nonlinear features may expand the applicability of emotion recognition systems.

Novel Methods to Improve Diagnostic Details in Medical Images through Registration and Fusion Techniques

Suneetha Rikhari

Mody University of Science and Technology, Lakshmangarh, Rajasthan

In the current era of technological development, medical imaging plays an important role in many applications of medical diagnosis and therapy. This requires more accurate images with much more details and information for correct medical diagnosis. Now a days, there are many medical modalities that give important information about different diseases. For example, Computed Tomography (CT) images provide better information on dense tissues like bones and the Magnetic Resonance (MR) images shows better information on soft tissues. However, single modality cannot provide high spatial resolution and visualization of medical images for disease diagnosis. In this regard, medical image fusion could be a powerful tool to combine multi modal images by using image processing techniques. Medical image fusion is the process of registering and combining multiple images from single or multiple modalities.

Image fusion methods are classified into three types: Pixel level fusion, Feature level and Decision level. Pixel level fusion is performed directly on the pixels present in the input images. Property descriptors, features and object labels derived from each source image are used for fusion in Objective level fusion. Symbolic or Decision level uses probabilistic decision information extracted from the decision markers. The decision makers are actually extracted from the Objective level fusion.

This research work focuses on pixel level fusion. In medical image analysis, edges and lines are considered as the most prominent details. Hence, edge preserving pixel level fusion methods are considered for carrying out the research work. MR and CT imaging modalities are considered as the source images.

The objective of the research work is to propose novel fusion techniques with less Peak Signal to Noise Ratio (PSNR), Cross Correlation (CC), and Root Mean Square Error (RMSE). In this context, a new fusion technique using Non-Linear Anisotropic filtering in PCA domain is developed. The fused image generated is qualitatively superior with respect to the existing methods but there is a scope for visual enhancement and quantitative assessment.

The fusion process requires accurate registration to avoid the misalignment during preprocessing. Hence, a novel implementation of medical image registration and fusion using Active Slope Meagerness and Statistics Based Steered Image Filtration (ASM-SSIF) is proposed. This technique registers the images simultaneously during the fusion process and the misalignment is gradually eliminated. This method has improved the overall image quality in terms of different image quality metrics.

One of the most crucial issues in image fusion is to calculate weight map which integrates the pixel activity information from different sources. However, design of weight assignment strategy is difficult and requires complex mathematics for generating a fused image. Hence, to overcome this, Deep Learning Convolutional Neural Network (CNN) is trained to encode a direct mapping from source images to weight map. The generated weight map in combination with the Statistics Based Steered Image Filter (SSIF) is used to generate a fused image. This proposed method has outperformed all the existing and the proposed NLAF-PCA and ASM-SSIF methods.

Finally, segmentation of tumor is done upon considering the fused images. Out of the three proposed methods, NLAF-PCA method preserves texture information while performing fusion. Hence, this method is applied on Tumorous images for texture analysis and Support Vector Machine (SVM) classifier is used for segmenting the tumor.

LIST OF ABSTRACTS

Track: Computer Science Engineering

Track: Electronics Engineering

Track: Civil and Mechanical Engineering

Smartphones Capturing Gait Biometrics – A Deep Learning Paradigm

Mohini Parihar[1], Pinaki Ghosh[2]

[1]PhD Research Scholar, [2]Professor
Sanjeev Agarwal Global Educational (SAGE) University, Bhopal
[1]*mohiniparihar@gmail.com, [2]pinaki.g@sageuniversity.edu.in*

This research paper aims to explore the feasibility and effectiveness of utilizing smartphones as a tool for capturing gait biometrics, employing a deep learning paradigm. Gait biometrics, the study of human walking patterns as a unique identifier, holds significant potential for applications in security, healthcare, and personalized technology. Traditional gait recognition systems have faced challenges in terms of accessibility and user-friendliness. In this context, smartphones, being ubiquitous and equipped with various sensors, present a promising avenue for unobtrusive and continuous gait data collection. The paper investigates the role of deep learning techniques in analyzing the gait data obtained from smartphones, aiming to enhance the accuracy and reliability of gait recognition systems. Key Objectives: To assess the viability of smartphones as a platform for capturing gait biometrics. To employ deep learning techniques to develop a robust gait recognition model using data collected from smartphones. To compare the performance of the proposed smartphone-based gait recognition model with traditional methods. Significance: The significance of this research lies in the potential transformation of gait biometrics from specialized, controlled environments to real-world, everyday scenarios. Smartphones, being an integral part of modern life, offer a convenient means of continuous gait data collection without requiring additional hardware. The application of deep learning in gait analysis enhances the model's ability to recognize subtle and complex patterns, contributing to improved accuracy and reliability. The findings of this study could pave the way for widespread adoption of gait biometrics, with implications for security systems, healthcare monitoring, and personalized technology interfaces. The fusion of smartphones, gait biometrics, and deep learning stands to revolutionize the landscape of human identification and interaction in various domains.

Keywords: Gait recognition, inertial sensor, person identification, convolutional neural network, recurrent neural network.

A Review of Recent Studies on Prediction of Cardiovascular Disease

Irfan Khan[1], Pinaki Ghosh[2]

[1]PhD Research Scholar, [2]Professor
Sanjeev Agarwal Global Educational (SAGE) University, Bhopal
[1]*irfank92@gmail.com, [2]pinaki.g@sageuniversity.edu.in*

The heart is a vital organ of the human body. It's the main part of our circulation system, and cardiovascular disease has been a common cause of mortality in the last few decades. It's increasing day by day at a rapid rate. So, it is necessary to build a system to diagnose cardiovascular disease beforehand. Machine learning is a branch of artificial intelligence; it learns from historical data, builds prediction models, and, whenever it receives new input data, predicts the outcome. The authors discussed the various machine learning algorithms used to measure the accuracy of cardiovascular disease. The prime contribution of our work is to study the various machine learning techniques used to measure accuracy to predict heart disease.

Technological Breakthroughs Shaping Smart Energy Administration in Urban Centres

Pooja Vishwakarma[1], Pinaki Ghosh[2]

[1]PhD Research Scholar, [2]Professor
Sanjeev Agarwal Global Educational (SAGE) University, Bhopal
[1]*vishwakarmapuja645@gmail.com, [2]pinaki.g@sageuniversity.edu.in*

The rapid urbanization and increasing energy demand in recent time have necessitated the advancement of smart cities that can efficiently supervise energy resources while ensuring feasible and well-being for their residents. Effective energy administration is essential to achieving these goals. This article explores the cutting-edge technology innovations driving intelligent energy management in smart cities. This integrates smart power grids, renewable energy sources, sophisticated metering infrastructure, demand driven systems, energy-efficient architecture, and the intricate world of data analysis. By examining the benefits, challenges, and future prospects of these technologies, this paper provides a comprehensive overview of how technology is shaping the energy landscape of modern urban environments.

Keywords: Smart City, Power grids, Energy Management, Intelligent Cities, Renewable energy.

A Brief Survey on Techniques for Protein Sequence Analysis

Prativesh Pawar Parihar[1], Dr Pinaki Ghosh[2]

[1]PhD Research Scholar, [2]Professor
Sanjeev Agarwal Global Educational (SAGE) University, Bhopal
[1]*prativesh.acro@mail.com, [2]pinaki.g@sageuniversity.edu.in*

There are currently a lot of biological data available, and data mining is essential in sorting the data. Many research on the use of data mining in bioinformatics have been conducted as a result of the efficacy of data mining techniques in all facets of computational biology. Over the past two decades, a body of literature on data mining methods in bioinformatics analysis has grown. A periodic examination of survey articles is essential, and grouping them makes it easier for the researcher to identify the study. This document also teaches non-specialists how to select among a variety of currently used strategies based on their strengths and weaknesses. In this study, an effort is made to offer a thorough analysis of the algorithms that are optimal for obtaining the desired outcome.

Keywords: Deep learning, natural language processing, protein annotation, protein language model, protein sequence embedding, survey of embedding models.

A survey of Configuring Server and Client on Network Firewall

Purvee Kashyap[1], Hirdesh Ranjan Sharma[2], Shalini Tripathi[3]

[1]*purveek@lnct.ac.in, [2]hirdeshigntu93@gmail.com, [3]shalinitripathi752@gmail.com*

This survey paper gives the strategy to configure DHCP Client and Server for the network security-based system. Security, as we all know, plays a prominent role in all the networks and also between server and client in the topology to configure the DHCP client reservation setup. So, DHCP is used to create the topology and manipulate the network for doing future tasks in the network.

Keywords: DHCP, Network Security, Firewall, Client and Server.

Blockchain and 5G Networks: A Synergistic Revolution

Shrawan Kumar Sharma[1], Parshant Sharma[2]

[1]PhD Scholar, [2]Associate professor
Dept. of CSE, Mandsaur University, Mandsaur
[1]*shrawansharma3669@gmail.com,* [2]*rk.prashantsharma@gmail.com*

In the contemporary digital landscape, blockchain technology and 5G networks have emerged as two pioneering innovations, each wielding significant transformative potential within its own right. Blockchain technology, celebrated for its attributes of decentralization, transparency, security, and immutability, has disrupted various industries, from finance to supply chain management. Simultaneously, 5G networks have heralded a new era of connectivity with their low-latency, high bandwidth capabilities, poised to revolutionize sectors such as telecommunications, healthcare, and smart cities. This research paper delves into the dynamic intersection of blockchain and 5G networks, elucidating how they inherently complement each other, opening doors to novel applications, and reshaping the technological landscape. This paper commences by elucidating the foundational principles of blockchain technology, chronicling its evolution from a mechanism underpinning cryptocurrencies to a versatile platform for decentralized applications (DApps) and smart contracts. Additionally, it expounds upon the advent of 5G networks, illuminating their critical features, including ultra-low latency and massive IoT support, which render them indispensable for realizing the full potential of emerging technologies like autonomous vehicles and augmented reality.

Keywords: Blockchain, 5G networks, smart contracts, blockchain consensus, Network slicing, D2D.

Autism Spectrum Disorder Detection Using Machine Learning

Priya Gyanchandani[1], Gaurav Shrivastava[2]

[1]PhD Research Scholar, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal,
[1]*priya.g6101991@gmail.com,* [2]*gourav.s@sageuniversity.edu.in*

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by a variety of behavioral and social problems that can be effectively managed through intervention and support if diagnosed early. However, early diagnosis of autism spectrum disorders is still very difficult. Current diagnostic methods often involve lengthy and expensive tests, including clinical examinations and interviews, making them impractical for large-scale screening. The aim of this study is to use a noninvasive and cost-effective method to solve important problems in identifying autism spectrum disorders in childhood. This study focuses on the potential of facial features (key features of a person's face) as an indicator of autism spectrum disorders. These studies highlight the need for a comprehensive, multidisciplinary approach to autism diagnosis that involves clinicians, researchers, data scientists, and the autism movement to improve early identification and support of individuals on the autism spectrum. This article focuses on machine learning for ASD diagnosis. It includes SVM, DT, RF, KNN, clustering and other methods.

Performance Analysis using Machine Learning for Code Mixed Languages in Sentiment Analysis

Shruti Mathur[1], Gourav Shrivastava[2]

[1]PhD Research Scholar, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal,
[1]shrutimathur19@gmail.com, [2]gourav.s@sageuniversity.edu.in

Social media podiums like Twitter, Facebook, and Instagram have gained a lot of attention these days and have become one of the most prominent platforms to communicate, share thoughts and voice opinions. Detection of human emotions like happiness, sadness, anger, sarcasm etc. in textual communications has, therefore, become very important Sarcasm is a way of communication that creates gap between the anticipated meaning and the genuine meaning comprehended from the conversation. Communication and human relations over social media sites like Facebook, Twitter circles around a lot of sarcasm and debates. Sarcasm detection is an important processing problem which is needed to understand the human and machine communication better. Code mixing, as the name suggests, alludes to blending various dialects or more than one language in a solitary expression or a sentence. For a multilinguistic country like India, code mixing has become a very common practice on social media platforms since the pandemic since it is easier for the users to use their native language along with expressing their feelings. This paper aims to understand the gap between the emotion and the contextual meaning by using different machine learning approaches for Sarcasm Detection of code-mixed Hi-En dataset. The algorithms used in this paper are Bernoulli Naïve Bayes, Logistic Regression and Support Vector Machine. SVM outperforms all the used algorithms giving an accuracy of 87.36%.

Keywords: Code-mixed language, sarcasm detection, Natural language processing.

Analyzing Parameters on The Usage of Software Development Methodologies: Agile, Lean & Dynamic System Development

Purvi Sankhe[1], Mukesh Dixit[2]

[1]PhD Research Scholar, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal,
[1]purvisankhe@gmail.com, [2]mukesh.d@sageuniversity.edu.in

In the rapidly evolving landscape of software development, agility has emerged as a cornerstone principle in navigating the complexities of modern projects. Agile Software Development is a paradigm that prioritizes adaptability, collaboration, and iterative progress, challenging traditional, rigid development approaches. This paper examines and analyses three prominent software development methodologies: Agile Software Development, Lean Development, and Dynamic Systems Development, with a focus on key parameters such as project requirements, user involvement, development team dynamics, type of project, and associated risks. Each methodology is introduced, providing insights into their fundamental principles and methodologies. The analysis systematically assesses the suitability and effectiveness of these approaches in various project scenarios, shedding light on their unique strengths and weaknesses. By scrutinizing how each methodology addresses specific project requirements, engages users, forms development teams, caters to project types, and mitigates risks, this paper aims to provide valuable insights to assist organizations in making informed decisions regarding the selection and implementation of the most appropriate development methodology for their projects.

Keywords: Software Development Models, Agile Process, High and Light weight models.

A Detailed Survey on Compressive Sensing Method for Image De-Noising

Aakash Pawar[1], Kaptan Singh[2], Amit Saxena[3]

[1]M.Tech Scholar, [2,3]Associate Professor
Computer Science & Engineering, TIEIT, Bhopal
[1]aakashpawar5799@gmail.com, [2]kaptan.singh@trubainstitute.ac.in, [3]amitsaxena@trubainstitute.ac.in

Image denoising is a crucial process in the field of image processing, wherein it aims to recover the true signal from a noisy image. It plays a fundamental role in various domains such as education, agriculture, geosciences, aerospace, surveillance, entertainment, and more, whether in electronic or print media. Noise can corrupt images, posing a significant challenge to researchers. Over time, extensive research efforts have produced numerous methods to address this problem, each categorized based on their underlying techniques. Several denoising algorithms have been proposed by various authors, including methods like Discrete Cosine Transform (DCT) and Discrete Wavelet Transform (DWT). This review paper provides an overview of significant developments in image denoising, highlighting their advantages and disadvantages. Its primary goal is to offer concise insights into different denoising methods, facilitating the selection of an appropriate strategy based on specific application requirements.

A Detailed Survey of Various Lightweight Cryptography Stream Ciphers for IOT

Chandan Kumar[1], Nitin Choudhary[2]

[1,2]Assistant Professor, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]chandan.k@sageuniversity.edu.in, [2]nitin.c@sageuniversity.edu.in

The internet has advanced significantly in the modern era, with millions of IOT devices connected to one another and exchanging enormous amounts of data, which poses a huge range of challenges like heterogeneity and scalability of devices, security of IOT generated data and so on. But several types of attacks, including brute-force attacks and exhaustive key attacks, can always target these data. Developing new cryptographic algorithms and selecting appropriate ciphers for providing confidentiality, integrity, authenticity and non-repudiation altogether as well as satisfying the device constraints are needed in today's scenario. Lightweight cryptography (LWC) offers a defense against these types of attacks and safe internet communication. However, not every cipher performs well in every parameter. Some stream ciphers perform well on hardware bases, while others perform well on software bases. Characteristics of each stream cipher are closely related to a specific setting and cannot be directly transferred to other applications. This paper presents various challenges faced by different researchers for finding suitable light weight cryptography (LWC) cipher for their specific needs for IoT application. The key contribution of this survey is to provide a detailed overview of existing light weight stream ciphers in terms of their performances, properties, applications, key sizes, and some other parameters. Moreover, this paper describes the basic measures required to combine symmetric and asymmetric techniques together to form a hybrid cryptosystem for securing IoT devices. Keywords: Internet of things, security, lightweight cryptography, ciphers, block, hybrid.

A Detailed Survey on Cluster Based Energy Efficient WSN Routing Protocols

Lokesh Kurmi[1], Kaptan Singh[2], Amit Saxena[3]

[1]M.Tech Scholar, [2,3]Associate Professor
Computer Science & Engineering, TIEIT, Bhopal
[1]lokeshbsda@gmail.com, [2]kaptan.singh@trubainstitute.ac.in, [3]amitsaxena@trubainstitute.ac.in

Wireless Sensor Networks consist of hundreds of tiny, inexpensive, resource constrained sensor nodes. Routing is a challenging task in such environment mainly due to the unique constraints the wireless sensor networks suffer from. Highly dynamic topology of wireless sensor networks is another challenge due to which the existing route becomes unavailable very frequently. Energy efficiency (EE) of the protocols and algorithms is a major design goal in sensor network setup. Energy consumption of nodes in Wireless Sensor Networks (WSNs) is a very critical issue, particularly in scenarios where the energy of nodes cannot be recharged. Optimal routing approaches play a key role in energy utilization, so there is great importance of energy efficient routing protocols in WSNs. Finally, this work discusses some latest research trends with respect to cluster-based energy efficient routing protocols in WSNs.

Keywords: Wireless Sensor Network, Routing, Energy Efficient, Cluster, LEACH, Cluster Head.

Predicting the Appropriate Crop Based on the Climatic Situations on the Historic Data by using Random Forest Machine Learning Algorithms

Harendra Singh[1], Medhavi Bhargava[2]

[1,2]Assistant Professor, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]harendra.s@sageuniversity.edu.in, [2]medhavi.b@sageuniversity.edu.in

Agriculture plays an important role in Indian economy. But now-a-days, agriculture in India is undergoing a structural change leading to a crisis situation. The only remedy to the crisis is to do all that is possible to make agriculture a profitable enterprise and attract the farmers to continue the crop production activities. As an effort towards this direction, this research paper would help the farmers in making appropriate decisions regarding the cultivations with the help of machine learning. This paper focuses on predicting the appropriate crop based on the climatic situations and the yield of the crop based on the historic data by using Random Forest machine learning algorithms. The paper proposes an idea to predict the crop and yield of the crop based on the climatic conditions and historic data related to the crop. The farmer will check the production of the crop as per the acre, before cultivating onto the field. The quantity of grains required by the population in a given year is heavily influenced by population growth and weather changes.

Image Based Potato Leaf Disease Detection Using CNN-LSTM model

Gargi Sharma[1], Gourav Shrivastava[2]

[1]M.Tech Scholar, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]gsgargisharma884@gmail.com, [2]gourav.s@sageuniversity.edu.in

In recent years, the agricultural industry has faced significant challenges in food production due to the prevalence of crop disease. Potato is one of the most well-known crops cultivates in India and diseases such as early blight and late blight, significantly impact the quality and yield of potatoes, and manual interpretation of these leaf disease is time consuming and labour intensive. To address the issue, this paper proposes a novel approach for potato leaf disease detection by combining CNN and LSTM algorithms. In the proposed algorithm CNN is used to extract different features from leaf images and then with the help of LSTM classifier, the result was perceived. The objective of the model is to develop an accurate and efficient model that can identify diseases affecting potato crops and the proposed model has achieved an accuracy of 98.5% on the potato dataset.

A Review on Software Success Rate Forecasting Using Deep Learning

Gulshan Kumar[1], Chetan Agarwal[2], Divya Envey[3]

[1,2,3]Department of Computer Science Engineering, RITS, Bhopal
[1]*gulshankumar0931@gmail.com, [2]chetan.agrawal12@gmail.com, [3]divyarits27ac.in@gmail.com*

Demand forecasting is one of the main issues of supply chains. It aimed to optimize stocks, reduce costs, and increase sales, profit, and customer loyalty. For this purpose, historical data can be analyzed to improve demand forecasting by using various methods like machine learning techniques, time series analysis, and deep learning models. In this work, an intelligent demand forecasting system is developed. This improved model is based on the analysis and interpretation of the historical data by using different forecasting methods which include time series analysis techniques, support vector regression algorithm, and deep learning models. To the best of our knowledge, this is the first study to blend the deep learning methodology, support vector regression algorithm, and different time series analysis models by a novel decision integration strategy for demand forecasting approach. The other novelty of this work is the adaptation of boosting ensemble strategy to demand forecasting system by implementing a novel decision integration model. The developed system is applied and tested on real life data obtained from SOK Market in which operates as a fast-growing company with 6700 stores, 1500 products, and 23 distribution centers. A wide range of comparative and extensive experiments demonstrate that the proposed demand forecasting system exhibits noteworthy results compared to the state-of-art studies. Unlike the state-of-art studies, inclusion of support vector regression, deep learning model, and a novel integration strategy to the proposed forecasting system ensures significant accuracy improvement.

Rise of Identity and Access Management with Microsoft Security

Sheetakshi Shukla

M.Tech Scholar, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
sheetakshi11@gmail.com

Identity and Access Management (IAM) is a pivotal element in modern cybersecurity strategies, enabling organizations to manage user identities and control access to digital resources securely. This paper focuses on Microsoft's comprehensive suite of IAM solutions, emphasizing the innovative capabilities of Microsoft Entra ID as a central component within its ecosystem. The discussion spans Entra ID's role in IAM, Multi-Factor Authentication (MFA), Conditional Access policies, and Microsoft Entra Privileged Identity Management (PIM).

This research explores the dynamic landscape of IAM in the context of Microsoft security, addressing challenges and opportunities posed by contemporary cybersecurity threats and evolving work environments. Key topics include the integration of IAM solutions with Microsoft 365 services, the impact of remote work on identity governance, and the effective implementation of conditional access policies to enhance security without compromising user experience.

Furthermore, the paper investigates the role of IAM, specifically Microsoft Entra ID, in meeting security and compliance requirements. It delves into data protection, threat intelligence, and compliance reporting within the Entra ID framework. As organizations navigate hybrid environments that span on-premises and cloud infrastructures, the research examines the intricacies of managing user authentication in such diverse setups.

The study concludes by emphasizing the importance of adapting IAM strategies continuously to address evolving cybersecurity challenges within Microsoft's security ecosystem. By referencing the latest Microsoft Entra ID documentation and industry best practices, this research contributes to a deeper understanding of the significance of IAM, specifically Microsoft Entra ID, and its practical implications for organizations seeking robust identity and access management solutions.

Security Features in Fingerprint Biometric System

Shilpa Jaiswar[1], Kirti Jain[2]

[1]M.Tech Research Scholar, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[2]*kirti.j@sageuniversity.edu.in*

At present, embedded systems operate in every environment on the planet. Many complex applications with previously unheard-of capability have been made possible by recent technological advancements. Regardless of the ability to shield critical data from malevolent attacks, security and privacy remained a prevalent concern for these systems. These worries are warranted since horrifying tales about embedded systems are told by the past security lapses and their aftermath. With the development of technology, the attacks are gradually changing and becoming more sophisticated. As a result, fresh approaches to security implementation in embedded systems are needed. This paper uses a case study to illustrate how security features are integrated into fingerprint biometric systems during the requirements analysis stage and maintained throughout the embedded system life cycle. A comparative analysis is provided between different biometric technologies, including face, fingerprint, iris, palm print, hand geometry, gait, signature, and keystroke. In order to provide more precise safety requirements or functions, the goal of this work is to analyze, break down, and convert the risks and countermeasures found during the requirements analysis utilizing the abuse case. Additionally, by examining the system requirements and outlining the primary procedures for biometric system protection in this article, we have demonstrated how security features can be incorporated into the biometric fingerprint system.

Navigating the Quantum Frontier: Towards Practical Implementations of Hybrid Quantum-Classical Cloud Computing

Ripoosudhan Sharma

M.Tech Scholar, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
ripu295@gmail.com

The advent of quantum computing has introduced a paradigm shift in computational capabilities, promising unparalleled advantages over classical systems. As quantum technologies continue to advance, integrating them with classical cloud computing infrastructures becomes imperative for harnessing their potential in practical applications. This research endeavours to navigate the quantum frontier by exploring the practical implementations of hybrid quantum-classical cloud computing. The study delves into the architectural intricacies of merging quantum and classical resources, addressing challenges such as interoperability, scalability, and security. Through a systematic investigation, this research aims to uncover the pathways that lead to practical and effective utilization of hybrid quantum-classical cloud computing in real-world scenarios. By identifying key use cases and evaluating the quantum advantage, the study contributes to a deeper understanding of how these hybrid architectures can revolutionize computing landscapes, opening avenues for advancements in computation, optimization, and problem-solving on an unprecedented scale.

Comparative Analysis of Microservices Architectures: Evaluating Performance, Scalability, and Maintenance

Mahesh Kumar Bagwani

M.Tech Scholar, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
maheshbagwani7@gmail.com

Micro services have become a key architectural paradigm in the ever-changing field of web application development. This study compares and contrasts micro services architectures in great detail, paying close attention to each one's scalability, maintenance, and performance. This research analyses a variety of micro services frameworks and reveals the subtleties of their architecture through a methodical assessment. Through an examination of critical performance indicators like response times, scalability under different workloads, and ease of ongoing maintenance, the study seeks to identify best practises and draw attention to potential issues related to each architecture. The knowledge gathered from this research will help architects and developers choose or optimise micro services frameworks with confidence. This paper not only contributes to the academic discourse but also offers pragmatic guidance for real-world applications, ensuring that the chosen architecture aligns seamlessly with the specific needs of a project. Embracing a holistic approach, this research provides a nuanced understanding of the trade-offs inherent in diverse micro services approaches, fostering a more robust and informed development community.

Malware Identification Using CNN and Deep Forest with Transfer Learning

Nivedita Singh

M.Tech Scholar, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
nivedita.pratima@gmail.com

Malware, also known as malicious software, is a set of code that performs malevolent operations with the sole purpose of harming, taking advantage of the individual, device, service, or network, and for monetary gains. With the evolution of Malware, the harmful intent and the degree of damage it causes has also greatly increased causing in huge economic losses. Researchers have proposed many different malware detection and classification models using various techniques like Machine Learning, Deep Learning, static analysis, dynamic analysis, visualization-based analysis, and more. In this work, malware identification methodology is proposed using hybrid deep learning models with transfer learning. After converting the suspected file into grayscale image, the proposed methodology accomplishes this task. Malware Identification i.e. Binary Classification will take place by using CNN for feature extraction of malicious/ benign file's image (which will be pre-trained for Transfer Learning) and Deep Forest for classification.

This proposed methodology will happen in the hope of, first, better and efficiently training the Deep Learning models for malware identification phase to achieve better accuracy using Transfer Learning to boost performance by re-using the related knowledge already learned; second, to give the end user with only the needed information of whether the file is infected or not as the information about malware families would be of no use to the regular users; and third, since training the model for both identification and classification task will only increase the pre-training and computational time and resource consumption, it will bring extra consumption, which is difficult to implement on mobile side or other resource-constrained devices like IoT, to counter this, this model of hybrid approach is proposed.

Sentiment Analysis of Depression Prediction from Social-Media: A Comprehensive Review

Yogesh Sahu

M.Tech Scholar, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
sahu79668@gmail.com

Sentiment analysis is an emerging paradigm that aims to discern the sentiments of individuals in a variety of everyday situations. Social media data, encompassing textual information, emoticons, symbols, and various images, would be utilised in every stage of the procedure, including categorization and analysis. Prior research conducted numerous trials utilising binary and triple classification; nevertheless, multi-class classification yields more accurate and precise results. By utilising polarity, multi-class classification would partition the data into numerous sub-classes. In the course of the categorization process, supervised machine learning techniques would be implemented. The monitoring or analysis of sentiment levels can be conducted through social media platforms. Anxiety or detection-based sentiment analysis on communal media data is the subject of this study, which employs a variety of artificial intelligence techniques. A visual advertisement in the survey promoted the utilisation of social media data, encompassing text, emoticons, and symbols, to identify sentiment through the implementation of diverse machine learning methodologies. The Support Vector Machine with Radial Basis Function (SVM-RBF) Algorithm demonstrates a higher precision value in the context of sentiment analysis. The proposed model outperforms the Linear SVM in terms of accuracy, precision, recall, and F1-score, with an improvement of 2.23%. The model also enhances the recall by 0.01% and the F1-score by 0.02, making it a more effective method for predicting software melancholy, thereby proving to be a significant improvement in the field.

A Review of Machine-Learning-Based IoT Healthcare Solutions

Ayaan Ali[1], Chetan Agarwal[2], Pramila Lovanshi[3]

Department of Computer Science Engineering RITS, Bhopal
[1]*ayaan3.ali@gmaill.com*, [2]*chetan.agrawal12@gmail.com*, [3]*rits.pramila@gmail.com*

Internet of Things and Machine Learning (ML) have wide applicability in many aspects of life, health care is one of them. With the rapid development and improvement of the internet, the conventional strategies for patient services diminished and supplanted with electronic healthcare systems. The use of IoT technology offers medical professionals and patients the most modern medical device environment. IoT things and Machine-Learning are valuable in various classifications from far off observing of the modern climate to mechanical mechanization. Moreover, medical care applications are principally indicating interest in IoT things in view of cost decrease, easy to understand and improve the personal satisfaction of patients. The latest applications for IoT medical treatment, investigated and still facing problems in the clinical environment, are needed for intellectual, creativity-based answers. In specific, portable, and implantable IoT model devices, investigated for calculating the data transmission. Implantable technologies lead to the natural substitution of the injured part of the human body. The creation of a wearable and implantable healthcare body area network faced several challenges that are illustrated in this study. In this paper, an overview of IoT and Machine Learning based on healthcare care demonstrated in detail, the applications that use in health care by incorporating Machine Learning (ML) for the Internet of Things (IoT) listed with all issues and challenges while using this application or devices for health care and their important usage. Also, algorithms used by Machine Learning in IoT for developing devices are indicated by showing previous work and classified each of them according to the used method.

A Review of Face Emotion Recognition Based on Deep Learning Approaches

Prince Raj[1], Chetan Agarwal[2], Pramila Lovanshi[3]

[1,2,3]Department of Computer Science Engineering RITS, Bhopal
[1]princerj6124@gmaill.com, [2]chetan.agrawal12@gmail.com, [3]rits.pramila@gmail.com

Facial expression recognition (FER) enables computers to understand human emotions and is the basis and prerequisite for quantitative analysis of human emotions. As a challenging interdisciplinary in biometrics and emotional computing, FER has become a research hotspot in the field of pattern recognition, computer vision and artificial intelligence both at home and abroad. As a new machine learning theory, deep learning not only emphasizes the depth of learning model, but also highlights the importance of feature learning for network model, and has made some research achievements in facial expression recognition. In this paper, the current research states are analyzed mostly from the latest facial expression extraction algorithm and the FER algorithm based on deep learning a comparison is made of these methods. Finally, the research challenges are generally concluded, and the possible trends are outlined.

Study of Software Defect Prediction using Forward Pass RNN with Hyperbolic Tangent Function

Swati Rai[1], Dr. Kirti Jain[2]

[1]M.Tech Scholar, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]swatirai1798@gmail.com, [2]kirti.j@sageuniversity.edu.in

The practice of locating and forecasting flaws in software modules prior to the testing stage is known as software bug prediction. It lowers maintenance expenses and enhances software quality. Machine learning is one of the many methods and strategies that have been used to bug prediction. Using deep learning architectures like Long Short-Term Memory (LSTM) networks and Convolutional Neural Networks (CNN), researchers have created bug prediction algorithms. A key component of software engineering that seeks to save costs and increase software quality is software defect prediction. Software defect prediction models are constructed using a variety of strategies, including statistical approaches, machine learning, and clustering.

Software failure prediction and proneness have long been considered critical challenges for the IT industry and software professionals. Conventional approaches may detect software defects inside an application, but they need previous knowledge of problems or faulty components. Automated software fault recovery models enable the programmer to significantly predict and recover from software issues via the use of machine learning techniques. This feature reduces mistakes, time, and money while also making the programmer run more smoothly. A software defect prediction development model was given using machine learning techniques, which could enable the programmer to carry out its intended purpose. A range of optimization evaluation benchmarks, including as accuracy, f1-measure, precision, recall, and specificity, were also used to evaluate the model's performance. The FPRNN-HTF (Forward Pass RNN with Hyperbolic Tangent Function) deep learning prediction model is based on convolutional neural networks and its hyperbolic tangent functions. The evaluation process showed how well CNN algorithms were used and how accurate they were. Additionally, a comparative metric is used to assess the proposed prediction model in comparison to other approaches. The collected data showed how well the FPRNN-HTF approach performed.

A Detailed Survey on Colour Image Encryption Standard for IoT Applications

Arshi Khan[1], Kaptan Singh[2], Amit Saxena[3]

[1]M. Tech scholar, [2,3]Associate Professor
Computer Science & Engineering, TIEIT, Bhopal
[1]arshikhan020797@gmail.com, [2]kaptan.singh@trubainstitute.ac.in, [3]amitsaxena@trubainstitute.ac.in

IoT networks serve as a way for various devices interconnected over the internet to exchange data with each other and with other services. Most Smartphones, laptops, and other communication devices are connected to the cloud today, making data accessible to everyone. There are many applications for IoT, from smart IoT applications to industrial products. Encryption is one of the best ways to make IoT networks secure since so much data is being transferred. The development of many modern coding methods has centered on the healthcare sector. In this work, a deep dive was made into the research on existing image encoding methods. A clear and comprehensive classification of the various image encoding methods in use today is presented in this paper. The researchers have noted that there is still room for improvement in image encryption in terms of security, parameterization, and computational performance. A comprehensive literature review on this topic was conducted, and some potential barriers to medical image coding were mentioned.

Classification and Identification of Fake Profile on Social Network: A Review

Samant Verma[1], Shailja Shukla[2]

[1]PhD Research Scholar, [2]Associate Professor
Department of CSE, RNTU, Bhopal
[1]samantverma7@gmail.com, [2]shailja.sharma@aisectuniversity.ac.in

This abstract describes how the use of social media has dramatically increased for various purposes such as commercial activity, business marketing, political propaganda, educational activity, and entertainment. However, the increase in usage has also attracted intruders who engage in illegal conduct through the use of malevolent communal information. The research discussed in this paper aims to capture both user and societal characteristics to identify spam reviews, bogus news, and rumors on social media platforms. Additionally, it is suggested that the research may be useful for identifying criminal user groups, studying the effect of political ideologies and influencing military users by their ideology. The paper also focuses on the intrusion detection mechanism over social media and proposed deep neural network-based model to detect fake profiles, active and inactive profile on social media.

Blockchain Technology in Banking and Finance

Yogesh Sharma[1], Mohit Bhusal[2], Manish Manker[3], Vaishnavi Shrivastava[4], Piyush Shastri[5]

B.Tech CSE, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]yogeshhh.1207@gmail.com, [2]mohitbhusal11@gmail.com, [3]manishmanker7489@gmail.com, [4]shrivashnavi@gmail.com, [5]piyushshastri65@gmail.com

This research investigates the utilization of block chain in the Banking and Finance sector, encompassing its applications, current status, challenges, advantages, and future potential. The study explores the ways in which block chain contributes to transparency and security, with a focus on practical instances like transaction processing and identity verification. Common obstacles faced by industry participants, including regulatory compliance and scalability concerns, are analysed. Additionally, the paper discusses the positive aspects of block chain, such as heightened efficiency, while recognizing limitations like privacy issues. Looking forward, the study touches upon forthcoming trends, including decentralized finance (DeFi) and smart contracts, influencing the trajectory of financial services. This survey aims to furnish valuable insights for researchers, industry practitioners, and policymakers, aiding them in navigating the dynamic landscape of block chain in Banking and Finance.

Enhancing Web Security: Mitigating SQL Injection and Cross-Site Scripting with an Innovative Approach Using the Knuth-Morris-Pratt String Matching Algorithm

Swapnil Waghela[1], Lakshita Mandpe[2], Nitisha Waghela[3]

Assistant Professor, CSE, IIST, Indore
[1]swapnilswaghela@gmail.com, [2]pcst.lakshita@gmail.com, [3]nitisha.j17@gmail.com

In the ever-evolving landscape of cyber security, web applications remain prime targets for malicious actors seeking to exploit vulnerabilities such as SQL injection and crosssite scripting (XSS). This research introduces a pioneering approach to fortify web security, focusing on the utilization of the Knuth-Morris-Pratt (KMP) string matching algorithm. Our method aims to proactively detect and prevent SQL injection and XSS attacks, mitigating potential threats before they can compromise the integrity of web applications. The Knuth-Morris-Pratt algorithm, known for its efficiency in pattern matching, is employed as a key component in our security framework. By integrating the KMP algorithm into the application's security layers, we enhance the ability to identify and neutralize malicious patterns associated with SQL injection and XSS, thereby significantly reducing the risk of successful exploitation. This research includes a comprehensive evaluation of the proposed approach through experimental analysis. The results demonstrate the efficacy of our method in real-world scenarios, showcasing a notable improvement in the detection and prevention of SQL injection and XSS attacks. The innovative integration of the KMP algorithm not only strengthens the security posture of web applications but also provides a scalable and efficient solution to combat the evolving landscape of cyber threats. As the digital ecosystem continues to face increasingly sophisticated cyber threats, our research offers a timely and practical contribution to the ongoing efforts to safeguard web applications against SQL injection and XSS vulnerabilities. By leveraging the capabilities of the Knuth-Morris-Pratt algorithm, we present a novel and effective strategy to fortify web security and enhance the resilience of online systems in the face of evolving cybersecurity challenges.

Security Model for Multi-Cloud Storage-Cloud computing

Harshita Sharma, Komal Thakur, Priyanka, Anshita Rana

Department of Electrical Engineering, Government Hydro Engineering College, Bilaspur, HP
harshi191105@gmail.com

Protecting the security of Cloud computing is an important component of the cloud environment and is often stored by the users where the complex information is with the cloud storage providers, but these providers are not trustworthy. That being the case, the written works seek to highlight cloud computing security issues, and found that 50% of cloud computing security issues are related to "single cloud" which led to a decline in popularity among users due to threats of service availability failure and the chance of malicious insiders in the single cloud. In this paper, we propose a new system to improve the security of the delivered cloud storage service via multiple-cloud computing and to develop a novel way for providing a secure data storage system that is easy to install, configure, and use with a compatible multiple-cloud model. This paper focuses on a secure low-cost multi-cloud storage security model in Cloud computing which holds an economical distribution of data across various service providers available in the market for secure storage with data availability.

A Detailed Survey on Visual Cryptography Color Images for Cloud Storage

Rakesh Kumar Verma[1], Daya Shankar Pandey[2], Varsha Namdeo[3]

[1]PhD Research Scholar, [2,3]Professor
Sarvepalli Radhakrishnan University, Bhopal
[1]rakeshvermabplsrk@gmail.com, [2]dayashankar.rkdfist@gmail.com, [3]varsha_namdeo@yahoo.com

It is a high concern to secure huge amount of imaging data stored over the cloud servers. The Visual Cryptography (VC) is a widely used approach to encrypt these imaging data. VC is a powerful technique in which a secret image can be divided into two or more shares and the decryption can be done using human visual system. The VC may understand as crypto sharing approach for embedding true crypto image information to the transparency ciphers. VC has wide range of applications like in biometrics, print online banking, cloud computing, internet voting, etc. In VC a secret image is hidden into two or more shares which on superimposing will recover the hidden image. There are many algorithms designed for VC to secure the images. A related survey has been done in this paper on various visual cryptography schemes based on the number of secrets, pixel expansion, type of share generated, image format, and number of secret images. Paper also presents a detailed review about various visual cryptography color images for cloud storage.

Fake News Detection Using Deep Learning: A Comprehensive Review

Amit Kumar Saxena[1], Kirti Jain[2]

[1]M.Tech Scholar, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]saxenastar.123@gmail.com, [2]kirti.j@sageuniversity.edu.in

Organizations from various domains are working to find effective solutions for detecting online-based fake news, which is a major issue at the moment. It can be difficult to recognise fake information on the internet because it is frequently written to deceive individuals. Deep learning-based algorithms are more accurate at detecting fake news than many other machine learning techniques. Previous reviews focused on data mining and machine learning approaches, with little attention paid to deep learning techniques for detecting fake news. Emerging deep learning-based techniques like Attention, Generative Adversarial Networks, and Bidirectional Encoder Representations for Transformers, on the other hand, were not included in earlier surveys. This research looks into advanced and cutting-edge false news detection techniques in depth. We'll start with the negative consequences of fake news. Then we'll talk about the dataset that was used in earlier research and the NLP approaches that were used. To divide representative methods into several categories, a complete overview of deep learning-based techniques has been presented. The most often used evaluation measures in the detection of false news are also reviewed. Nonetheless, in future research paths, we propose additional recommendations to improve fake news detection techniques.

A Study of Machine Learning Techniques for Enhanced Weather Prediction & Forecasting

Vishwadeep Singh[1], Chandan Kumar[2]

[1]M.Tech Scholar, [2]Assistant Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]vishwadeeps10@gmail.com, [2]chandan.k@sageuniversity.edu.in

Weather prediction and forecasting play a pivotal role in various sectors, from agriculture and transportation to disaster management. With the emergence of machine learning techniques, there has been a surge in leveraging these methodologies to enhance the accuracy and precision of weather forecasts. This paper presents a comprehensive survey of the application of machine learning in weather prediction and forecasting. It explores the diverse range of machine learning approaches adopted in weather forecasting, including regression, neural networks, support vector machines, clustering, and ensemble methods. Furthermore, the survey highlights the current state-of-the-art methodologies, recent advancements, and future directions in the domain of machine learning-based weather prediction. It discusses the potential implications of these advancements on improving forecast accuracy, enabling more timely and precise predictions, and fostering resilience against weather-related risks.

GLD: Hybrid Deep Learning Based Advanced Index Movement Prediction Model

Alka Sahu

Research Scholar, TIT excellence, Bhopal
sahualka10@gmail.com

Hybrid Deep Learning Based Advanced Index Movement Prediction Model introduces an innovative approach to predict stock index movements, specifically focusing on the Indian Market i.e. Nifty 50 Index and all its participant companies, US market Dow Jones and its all participants, through the development and application of a hybrid machine learning model. The study utilizes a 15-year dataset, with 80% (12 years) allocated for training and the remaining 20% (3 years) for testing the model's predictive capabilities. The hybrid machine learning model incorporates Gated Recurrent Unit (GRU), Long Short-Term Memory (LSTM), and Deep Neural Network (DNN) architectures. Leveraging these advanced techniques, the model aims to capture complex temporal patterns and relationships within the financial data to enhance prediction accuracy. The dataset encompasses various financial features, including Date, open, high, low, close, Adj Close, Moving Average, and Volume. By integrating these factors, the model is designed to discern intricate patterns and correlations that influence stock index movements. The results of the study reveal a remarkable 99% accuracy in predicting the movement of Infosys stock indices. This high level of accuracy underscores the efficacy of the hybrid machine learning model, showcasing its potential as a robust tool for forecasting financial market trends. This research not only contributes to the field of financial prediction but also underscores the significance of hybrid machine learning models in capturing nuanced patterns within extensive datasets. The findings offer valuable insights for investors, financial analysts, and researchers seeking advanced methodologies for stock market prediction, with potential applications extending beyond the scope of this study.

A Review of Deep Learning Mechanisms for Intrusion Detection and Prevention In Network and IOT based Environments

Nikhil Chaurasia[1], Neeraj Sharma[2]

[1]Assistant Professor, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[2]Research Scholar, University Institute of Technology, RGPV, Bhopal
[1]*nikhilsub97@gmail.com,* [2]*neerajsharmans12@gmail.com*

As the Infrastructure is growing, we found a tremendous growth in Digitization, every enterprise is focusing on premise Data center or on the Rented Cloud, so to meet security prospective from Intrusion is one of the major concerns. A New terminology is being used as CSP's (cyber-physical systems) instead of Datacenter and with the Evolvement of Deep Learning (DL) Concepts and its efficiency DL procedures finds a great scope to remove all the vulnerabilities by priory identifying Risks and then afterwards by prevention from any king of malware impacts .In our survey we basically focusing the Application of Deep Learning (DL) Procedures to Build a secure systems by implementing strong Neural Networks(NN) by providing suitable Training with the malicious Data sets and then afterwards to develop a good prevention capabilities, Deep learning is the subset of machine Learning (ML) and also in the previous scenarios ML techniques proves to be very much stable due to their self-Learning and enhancing Capacity in terms of Weighted Attributes they are used in Spam detection, DOS Attacks, probe Attacks, Host based Attacks, Network based Attacks etc. In our survey paper we will enlist multiple DL Learning Procedures as per the Attack Types.

An Integrated Approach for Information Security Risk Assessment

Keerti Dixit

M.Tech Scholar, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
keertidixitics@gmail.com

Technology has become an essential component of organizations, driving productivity, innovation, and defining entire processes and product categories. However, these advances come with additional risk; the devices that drive an organization can fail at any time or be attacked by malicious actors. Larger organizations have learned to deal with these risks, but small and medium-sized organizations have been largely left behind. This dissertation sought to investigate the Information security-related problems Small and Medium Organizations experience and what these organizations can do to solve them.

There are numerous risk assessment models nowadays and many more emerging every day. They all have the same basic goal, but try to achieve it through very different perspectives and addressing problems differently. This dissertation offers a thorough analysis of the existing methodologies in this regard. It also emphasises a comparison of the methodologies currently used for assessing information risk. We have developed an Integrated Information Security Risk Assessment (IISRA) framework and methodology with a thorough grasp of the potentials and implementation problems that may be used to harness the key aspects of current approaches and address their identified weaknesses. Although there are various models for risk assessment, these are method-based, need intricate calculations to manage risk, and are extremely difficult to anticipate. IISRA allows other and emergent challenges to be taken into consideration in addition to integrating the salient elements of other existing methods that should be taken into account in an organization's computing environment. IISRA's goal is to put in place the right measurement to reduce or eliminate the effects that various security-related threats and vulnerabilities could have on an organisation.

Automatic Facial Expressions prediction using Segmentation and Feature Extraction Optimization

Ratnesh Kumar Dubey[1], Shubha Mishra[2]

[1]Assistant Professor, Computer Science and Engineering, ITM University Gwalior
[2]Assistant Professor, Centre for Artificial Intelligence, MITS Gwalior
[1]ratnesh.soet@itmuniversity.ac.in, [2]mis.shubha@gmail.com

In emotional recognition computing, one of the most revolutionary technologies is facial expression interpretation. Finding the best feature points and classifying the different types of facial expressions based on training feature points is the aim of affective facial characteristics expressions recognition. The genetic search algorithm and algorithm optimization are used by the current framework for the automated interpretation of facial expressions to identify the most correct locations. The algorithm is used on the Mars-500 dataset, and the results indicate how well it will perform. However, after identifying some problems and opportunities for improvement in the current algorithm, a new and more effective algorithm is predicted by segmenting images and then using a feature extraction algorithm to predict specific feature vector points. When forecasting more feature points and accuracy, the suggested system performs better than the current system.

Visual Speech Recognition: Exploring the Potential of Lip-Reading Techniques

Liza Arora

B.Tech CSE, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
liza29arora@gmail.com

Lip reading, a fundamental aspect of communication, has undergone revolutionary advancements with the integration of Tensor Flow and Python within deep learning. This abstract provides a concise overview of their pivotal roles in the context of lip-reading tasks. Python's robust libraries, coupled with TensorFlow's capabilities, have propelled significant strides in this domain. Data preprocessing involves Python's adept handling of video sequences, extracting crucial lip regions with precision. Model development leverages TensorFlow's versatile architecture, notably Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs), adept at capturing intricate lip movements and nuances. This project validates the utilisation of machine learning by employing deep learning techniques and neural networks to develop an automated lip-reading system. A subset of the dataset underwent training on two distinct CNN architectures. The trained lip-reading models underwent evaluation based on their accuracy in predicting words. The most effective model, in terms of performance, was integrated into a web application to enable real-time word prediction.

Navigating Change: A Dynamic Topology Approach for Resilient MANET's

Medhavi Bhargav

Assistant Professor, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
medhavi.b@sageuniversity.edu.in

Mobile Ad Hoc Networks (MANETs) are characterized by dynamic and unpredictable changes in network topology, posing significant challenges to communication reliability and performance. This research paper explores innovative approaches to dynamically manage and adapt to the changing network structures inherent in MANETs. The study focuses on addressing issues related to link stability, route maintenance, and overall network resilience. The paper begins with a comprehensive review of existing literature on MANETs, highlighting the evolving nature of network topologies and the impact on communication protocols. A critical analysis of current dynamic topology management techniques reveals their limitations in addressing the unique challenges posed by highly mobile and decentralized networks. To enhance the reliability and efficiency of MANETs, we propose a novel topology management algorithm that dynamically adjusts to variations in node positions and connectivity. The algorithm incorporates intelligent prediction models based on historical mobility patterns, allowing for proactive adaptation to network changes. Through extensive simulations and performance evaluations, we demonstrate the effectiveness of the proposed approach in maintaining stable communication paths and reducing packet loss.

Addressing Fertilization Challenges to Enhanced Crop yields using Machine Learning

Isha Tandon[1], Mohd Adnan Mohsini[2], Nikhil Kewlani[3], Sahil Kumar Aggarwal[4]

ABES Engineering College, Ghaziabad, Uttar Pradesh
[1]*ishasinghtandon@gmail.com*, [2]*adnanmohsini123@gmail.com*, [3]*nikhilkewlani797@gmail.com*,
[4]*sahil.aggarwal@abes.ac.in*

Farmers grapple with the challenge of managing fertilizer use, directly impacting crop yields and the preservation of essential nutrients. To optimize agricultural output while conserving resources, farmers require precise guidance on the judicious application of fertilizers. Rainfall dynamics play a crucial role in nutrient loss post-application: adequate rainfall aids in nutrient absorption and fertilizer dissolution, while excessive rain elevates the risk of runoff. In response, an innovative approach harnesses an updated random forest algorithm, leveraging time-series data to devise customized nutrient recommendations. By scrutinizing patterns in rainfall and comprehending the distinct fertility needs of various crops, this method forecasts the precise quantities of nutrients necessary for optimal growth. By aligning fertilizer application with specific crop demands and rainfall patterns, it aids in the conservation of soil nutrients. It ensures the efficient utilization of resources, minimizes environmental impact, and fosters a more resilient and productive agricultural system. Ultimately, by empowering farmers with knowledge-backed recommendations derived from advanced algorithms, this approach has the potential to revolutionize agricultural practices, promoting both increased productivity and sustainability in farming methods.

The Role of Big Data Analytics in the Industrial Internet of Things

Nivedita Singh[1], Shruti Dixit[2], Aaradhna Soni[3]

[1,3]Assistant Professor, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]niveditasingh7653@gmail.com, [2]shruti.d@sageuniversity.edu.in, [3]aaradhna.s@sageuniversity.edu.in

The Industrial Internet of Things (IIoT) has emerged as a transformative force reshaping traditional industrial processes through the integration of connected devices, sensors, and advanced technologies. This convergence has generated vast volumes of data, paving the way for the application of Big Data analytics to derive actionable insights and optimize operations within industrial settings. This paper explores the pivotal role played by Big Data analytics in enhancing the efficacy and functionality of the Industrial Internet of Things. Firstly, the amalgamation of sensors and connected devices in IIoT ecosystems generates an incessant stream of data points from various sources. Big Data analytics tools and algorithms facilitate the processing and analysis of this diverse data, enabling real-time monitoring, anomaly detection, and predictive modeling. This capability empowers industries to preemptively address equipment failures, reduce downtime, and optimize production processes, thereby enhancing overall productivity.

Deep Learning Operations by Elephant Herd and BAT Algorithm for IOT Intrusion Detection

Diwakar Kumar Chaudhary, Kanchan Jha, Pritaj Yadav

Computer Science and Engineering, Ravindranath Tagore University, Bhopal, India
[1]diwakarbright@gmail.com, [2]kkanchan.jha@gmail.com, [3]yadavpritaj@gmail.com

Internet of Things (IOT) brings flexibility and control in unfavorable conditions. IOT is adapted by various businesses to provide solutions for communication. But flexibility in computer networks increases the chance of attack. Hence security of data is highly desirable to build trust in the nodes, as many solutions collect data for research, monitoring purposes. This paper has proposed a model that improves the network security by optimizing the detecting session features. Deep learning operations were applied to identify the feature set for training and testing of machine. Proposed model uses the elephant Herd and BAT algorithm for feature detection. Selected features were further process for normalization of training values. Back propagation neural network was used in the proposed model for the training of IOT intrusion detection. Experiment was done on a real IOT dataset developed in 2020, and has five classes of attacks. Result shows that the proposed BAT based model has increased the precision, recall and detection accuracy parameters.

Analyzing the Impact of IEEE 802.11 MAC Layer Malfunction in Dynamic Network

Chanchal Lohi[1], Piyush Kumar Shukla[2], Ratish Agarwal[3]

[1]M.Tech Scholar, [2,3]Professor
UIT, RGPV, Bhopal
[1]lohi.chanchal@gmail.com, [2]pphdwss@gmail.com, [3]ratish@rgtu.net

Growing demands for real-time data exchange and analysis in the twenty-first century have elevated the significance of dynamic networks. Due to their adaptability, they are highly suitable for a wide range of applications. Dynamic networks often employ the IEEE 802.11 standard to establish wireless data transmission. Presently, considerable research focuses on the intricate challenges that emerge due to node misconduct in IEEE 802.11-based networks, which significantly impact network performance. Hence, it is critical to develop an analytical model to comprehensively understand the fundamental characteristics of IEEE 802.11-based wireless networks when node misbehaviours occur. This article aims to facilitate a more thorough understanding of node misbehaviours by introducing an analytical framework for network performance evaluation

A Comprehensive Review of Leaf Detection Systems Implemented with OpenCV in Python Abstract

Shubhanshu Vaisay

M.Tech scholar, Technocrats Institute of Technology (Excellence), Bhopal
schshubhamgupta@gmail.com

The review paper provides a comprehensive analysis of the state-of-the-art in leaf detection systems leveraging the OpenCV library within the Python programming environment. With increasing interest in precision agriculture, plant pathology, and environmental monitoring, automated leaf detection has become a crucial component of computer vision applications. This paper synthesizes a diverse range of research studies and projects that employ OpenCV for robust leaf detection. The review begins by outlining the fundamental principles of leaf detection and the role of computer vision techniques in this domain. A detailed examination of various methodologies employed in the literature follows, encompassing image preprocessing, feature extraction, and classification techniques facilitated by the OpenCV framework. A critical assessment of the performance metrics utilized in these studies provides insights into the efficacy of different algorithms in terms of accuracy, speed, and adaptability to varying environmental conditions. The review also explores the integration of machine learning techniques with OpenCV for enhancing the versatility and generalizability of leaf detection systems. The paper highlights key challenges faced in implementing leaf detection systems, such as robustness to occlusion, variability in leaf shapes, and real-time processing requirements. Additionally, it addresses advancements in hardware and software technologies that contribute to the continual improvement of OpenCV-based leaf detection solutions. In conclusion, this review consolidates the existing knowledge on leaf detection systems using OpenCV in Python, offering a valuable resource for researchers, practitioners, and enthusiasts in the fields of agriculture, biology, and computer vision. By synthesizing insights from diverse studies, the paper aims to guide future research directions and innovations in the development of efficient and adaptable leaf detection systems

Brain Tumour Detection using Deep Convolutional Neural Network

Vandana Patel

M.Tech scholar, Technocrats Institute of Technology (Excellence), Bhopal
vanadna.p@sageuniversity.edu.in

The paper introduces an innovative approach for the accurate detection of brain tumors through the application of the ResNet 50 Convolutional Neural Network (CNN). The utilization of deep learning techniques, particularly ResNet 50, offers a powerful paradigm for automatic feature extraction and classification from complex medical imaging data. Our methodology involves training the ResNet 50 model on a meticulously curated dataset comprising diverse magnetic resonance imaging (MRI) scans. The architecture's inherent ability to mitigate the vanishing gradient problem and facilitate the training of deeper networks proves instrumental in discerning intricate patterns association with brain tumors. Through comprehensive experimentation and validation, our results demonstrate the superior performance of the proposed ResNet 50 CNN in distinguishing between pathological and healthy brain tissues. Comparative analyses with state-of-the-art methods underscore the effectiveness of our approach, showcasing heightened sensitivity, specificity, and overall accuracy. The proposed model not only exhibits exceptional diagnostic capabilities but also holds promise for real-world clinical applications. Its potential to contribute to the rapid and precise detection of brain tumors marks a significant stride forward in leveraging deep learning technologies for enhancing neuroimaging diagnostic

PSO-HTCRDC: Design of a Protocol for Raw Data Collection in Wireless Sensor Networks

Lakshita Mandpe[1], Reetu Gupta[2], Smita Marwadi[3]

Assistant Professor, CSE IIST, Indore
[1]pcst.lakshita@gmail.com, [2]reetugupta2000@gmail.com, [3]marwadismita@gmail.com

Wireless Sensor Networks are efficient and effective tool for collecting and extracting the data. Since the energy supply for sensor nodes is limited, extending their lifespan is the focus of current research. A multi-hop network can be designed to collect the raw data without the need of redundant sensor nodes. Numerous energy-efficient algorithms for routing have been proposed for boosting the network lifetime. This paper presents the design of a hybrid routing protocol named PSO-HTCRDC. The protocol collects the raw data utilizing cluster- and tree-based methods (HTC-RDC) with Particle Swarm Optimization (PSO). The PSO technique is used to determine the candidate cluster head (CH) location. An adaptive clustering method based on node distribution balances the energy consumption and creates a balanced cluster distribution. In addition, the protocol helps in boosting the lifetime of WSNs.

A Comprehensive Review of Air Quality Prediction Using Machine Learning Models

Anuj Agarwal

M.Tech Scholar, Technocrats Institute of Technology (Excellence), Bhopal
dasagrawal58@gmail.com

The review paper synthesizes the current state-of-the-art methodologies and advancements in the realm of air quality prediction through the lens of machine learning models. With the escalating global concerns regarding air pollution and its profound impacts on human health, there exists a critical need for accurate and efficient prediction tools. This paper provides a thorough examination of recent research, focusing on the methodologies, datasets, and outcomes associated with employing machine learning models for air quality prediction The review spans a spectrum of machine learning techniques, including regression models, ensemble methods, and deep learning approaches, emphasizing their application to diverse urban environments and varying pollutant profiles. A meticulous analysis is conducted on the performance metrics employed in these studies, shedding light on the comparative strengths and limitations of different algorithms. The paper also explores the transferability and generalizability of models across different geographic locations and environmental conditions, aiming to distill overarching principles that contribute to the robustness of predictive systems. By critically evaluating methodologies and outcomes, this paper not only serves as a valuable resource for researchers and practitioners in the field but also lays the foundation for future advancements in the development of accurate and adaptable air quality prediction tools.

Enhanced Survey on Cloud based Disaster Recovery with improvement using Block Chain

Atesh Kumar

Assistant Professor, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
ateshsinghcse@gmail.com

In recent years, the increasing reliance on cloud-based services has underscored the critical need for robust disaster recovery mechanisms to ensure the resilience of digital infrastructures. Traditional disaster recovery solutions often face challenges in terms of reliability, security, and transparency. This research presents an enhanced survey on cloud-based disaster recovery, integrating improvements through the application of blockchain technology. The proposed framework leverages the decentralized and tamper-resistant nature of blockchain to enhance the security and transparency of disaster recovery processes. The study evaluates the current landscape of cloud-based disaster recovery solutions, identifying key limitations and vulnerabilities. Subsequently, it explores the potential of blockchain technology to address these challenges and enhance the overall effectiveness of disaster recovery mechanisms. In the contemporary landscape of digital infrastructure, the ubiquity of cloud computing has revolutionized the way organizations manage and store their data. With this transformative shift, the reliance on cloud-based services has become integral to operational continuity. However, this dependence brings forth an inherent vulnerability— the potential for catastrophic data loss in the face of unforeseen disasters. As a response to this, disaster recovery mechanisms have gained prominence as an essential component of a resilient digital ecosystem. Traditional approaches to disaster recovery, while effective to a certain extent, grapple with challenges related to reliability, security, and transparency. In light of these challenges, this research embarks on an exploration of innovative solutions by delving into the integration of blockchain technology into cloud-based disaster recovery strategies. The objective is to scrutinize the potential enhancements that blockchain, with its decentralized and tamper resistant nature, can bring to the existing paradigms of disaster recovery.

Improving Stock Price Prediction Accuracy: A Comparative Analysis of Company Stocks and Market Indices Using the GRU-DNN Model

Jitendra Singh Sisodia

Assistant Professor, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
jitendra.s@sageuniversity.edu.in

The research work dives into an in-depth exploration of stock price prediction using the GRU-DNN (Gated Recurrent Unit - Deep Neural Network) model. The study uses data obtained from the Yahoo Finance library in Python Jupyter Notebook over 15 years with a data split of 75% for training and 25% for testing purposes. The analysis includes a total of five major companies and two indices from the Indian and American markets. A key aspect of this research is the incorporation of evaluation metrics, including R-squared, RMSE (Root Mean Square Error), MSE (Mean Squared Error), MAE (Mean Absolute Error), and MBE (Mean Bias Error) to assess the model's predictive performance comprehensively. The key conclusion from this study is the significant difference in prediction accuracy between individual company shares and market indices. The results highlight that market indices show better predictive power than individual company stocks. This difference is particularly noticeable in the Indian and US markets, where the emphasis is placed on the reliability and accuracy of index movements for accurate predictions. The observed problems and reduced accuracy in predicting individual company stock prices are attributed to the complex nature of company-specific factors such as fundamentals. In contrast, market indices, which are aggregates of multiple stocks, offer a more stable and predictable model, with historical data proving essential for accurate predictions. The research further highlights the practical importance of using machine learning models, specifically the GRU-DNN architecture, in forecasting stock prices. By incorporating various evaluation metrics, the paper provides a comprehensive assessment of model performance and offers valuable insights for investors and financial analysts. The findings suggest that for more robust and reliable forecasts, focusing on index movements rather than individual company stocks is a prudent approach supported by rigorous evaluation across multiple metrics.

Showcasing Retrieval and Language Models for Information-Rich Natural Language Processing (NLP)

Jitendra Singh[1], Gaurav Shrivastava[2], Nikhil Chaurasiya[3]

[1]M.Tech Scholar, [2]Associate Professor, [3]Assistant Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]*jeetsin312@gmail.com*, [2]*gourav.s@sageuniversity.edu.in*, [3]*nikhil.c@sageuniversity.edu.in*

In the realm of Natural Language Processing (NLP), the integration of retrieval and language models has become paramount for handling information-rich content effectively. This paper presents a comprehensive exploration and showcase of advanced techniques in combining retrieval and language models to enhance the capabilities of information-intensive NLP systems. The primary objective is to bridge the gap between knowledge retrieval and contextual understanding, enabling applications to seamlessly navigate extensive knowledge bases. The paper begins by surveying state-of-the-art retrieval models, delving into their strengths and limitations in extracting relevant information from large datasets. Subsequently, it explores the landscape of language models, including transformer-based architectures such as BERT and GPT, focusing on their abilities to capture intricate linguistic nuances and semantic relationships within the context of information-rich tasks. Our approach involves the careful composition of these models, emphasizing the synergy between retrieved knowledge and contextual understanding. The proposed models aim to not only retrieve relevant information but also comprehend and integrate it seamlessly into the context of natural language understanding. To demonstrate the efficacy of the showcased models, we present practical applications across diverse domains, including healthcare, legal, and scientific literature analysis. We evaluate the models using rigorous metrics, assessing their performance in terms of accuracy, precision, and recall. Additionally, this paper addresses the ethical considerations associated with deploying advanced NLP models in information-rich environments. It explores strategies for bias mitigation, transparency, and fairness, ensuring responsible AI practices in knowledge-intensive applications. Through this exploration, the paper contributes valuable insights to the evolving landscape of informationrich NLP. The showcased models serve as a foundation for future advancements in the field, empowering researchers and practitioners to build more robust and context-aware NLP systems.

Emoticon Generation using Facial Emotion Recognition

Swati Tomar[1], Kirti Jain[2]

[1]M.Tech Scholar, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
kirti.j@sageuniversity.edu.in

Facial emoji generation is a human-computer interaction system. Face expressions are a key feature of non-verbal communication, and they play expressions are a key feature of non-verbal communication, and they play an important role in Human Computer Interaction. Emoji Generation in real time by recognizing the facial expression of a person has always been challenging. Facial expressions are vital to social communication between humans. As the world is emerging with new technology every day, there are more virtual interactions like text messages than the real ones. Emoticons help in social interaction virtually, with less exchange of words. This paper presents an approach of Emoji Generation using Facial Expression Recognition (FER) using Convolutional Neural Networks (CNN) with Machine Learning and Deep learning. This model created using CNN can be used to detect facial expressions in real time. The system can be used for analysis of emotions while users watch movie trailers or video lectures, feedback processing.

Revolutionizing Urban Traffic Control: Intelligent Intersection Management using Q-Learning and Deep Neural Networks

Shipra Swati

Assistant Professor, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
shipra.s@sageuniversity.edu.in

Urban traffic management crucially relies on efficient intersection control that prompts exploration into advanced methods. This study is an attempt to integrate Q-learning with deep neural networks for creating adaptive, intelligent traffic light systems for both individual and interconnected intersections. The core objective of this research is to optimize the traffic flow and to reduce vehicle queue times based on real-time traffic density. The integration of Qlearning and deep neural networks empowers traffic lights to make real-time, data-driven decisions based on traffic density, revolutionizing traditional traffic control paradigms. By enabling adaptive and intelligent decision-making, these systems demonstrate their potential to transform urban traffic management, minimizing congestion and enhancing overall efficiency in densely populated city regions. Simulation of Urban Mobility (SUMO) serves as the testing ground for evaluating these systems across varying traffic intensities—low, medium, and heavy. Results unveil a remarkable decrease in average vehicle queue time at individual intersections compared to conventional fixed-time traffic lights. The presented work proposes novel contributions in traffic management strategies. Firstly, it advances the efficacy of individual intersection control systems, showcasing their superiority over static traffic light models. Secondly, it explores the operational intelligence of smart traffic lights and control systems for optimizing traffic flow.

Wireless Sensor Networks Fault Diagnosis Using Energy Efficient Delay Sensitive

Vishwajit K. Barbudhe[1], Shruti Dixit[2]

[1]PhD Research Scholar, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]*vishwajit.barbudhe@sitrc.org, [2]shruti.d@sageuniversity.edu.in*

With the increasing prominence of Wireless Sensor Networks (WSNs), addressing fault diagnosis has become a pivotal research concern. The emergence of faulty nodes, often stemming from energy depletion, poses significant challenges to the network's communication reliability and performance. This paper introduces the Energy Efficient Delay Sensitive (EEDS) algorithm as a solution to enhance both energy efficiency and delay management in the presence of faulty nodes. The proposed EEDS algorithm leverages Particle Swarm Optimization (PSO), a well-established optimization technique, to determine an optimised route between source and destination nodes. The algorithm considers the residual energy of nodes as a key factor in initiating communication, ensuring efficient utilisation of available resources. Additionally, the EEDS method employs the Ad Hoc On-Demand Multipath Distance Vector (AOMDV) routing protocol to establish a multipath route, enhancing network robustness. This paper comprehensively details the working of the PSO process, the network model, energy model, fault model, and presents a flowchart along with the algorithmic steps of the EEDS method. The proposed approach not only addresses the challenges associated with faulty nodes but also contributes to minimising energy consumption, thus extending the overall lifetime of the network. The effectiveness of the EEDS algorithm is validated through simulations, demonstrating its potential to significantly improve the fault-tolerant capabilities of WSNs in real-world scenarios.

Investigation of Black Hole Attack on Ad-Hoc Network Using AODV Routing Protocols by Intrusion Detection Technique

Gagandeep Sahu[1], Shruti Dixit[2]

[1]PhD Research Scholar, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]*gagandeep.sahu@gmail.com, [2]shruti.d@sageuniversity.edu.in*

Wireless networks are gaining popularity day by day, as users want wireless connectivity irrespective of their geographic position. There is an increasing threat of malicious nodes attacks on the Mobile Ad-hoc Networks (MANET). Black hole attack is one of the security threat in which the traffic is redirected to such a node that actually does not exist in the network. It's an analogy to the black hole in the universe in which things disappear. MANETs must have a secure way for transmission and communication which is quite challenging and vital issue. In order to provide secure communication and transmission, researcher worked specifically on the security issues in MANETs, and many secure routing protocols and security measures within the networks were proposed.

Assessment of Machine Learning for Predicting Solar Energy Generation and Radiation

Jagrati Gupta[1], Shruti Dixit[2]

[1]PhD Research Scholar, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]*jagratigupta02@gmail.com,* [2]*shruti.d@sageuniversity.edu.in*

The solar photovoltaic (PV) energy system serves as a crucial component within the renewable energy framework, its performance intricately linked to prevailing weather conditions like temperature and radiation intensity. This study explores the application of machine learning (ML) in forecasting solar energy generation and radiation. The paper provides a comprehensive review of ML algorithms and methods employed for predicting solar energy production and radiation, presenting an overview of the current state of the art, including various ML techniques and associated parameters.

Development of Image Encryption using Enhanced Sequence of Chaotic maps and Pixel shifting Algorithm for IOT Application

Vikas Kumar Pandey[1], Sanjeev Kumar Gupta[2]

[1]Phd Research Scholar, [2]Professor
Rabindranath Tagore University, Raisen
vikas15bhopal@yahoo.in

The encryption field is turning out to be vital in the current period in which data security is of at most concern. Security is a significant issue in correspondence and capacity of images, and encryption is one of the ways of guaranteeing security. The image encryption has turned into the main center point in this period of break of safety and classified data held inside a piece of information or data. Image Encryption or ciphering of images is the methods to secure image being hacked or damaged while transmitting. Such security method applied on transmits information from one node to another node, which is sensitive to disclose and need to be kept as secure as possible. Previous researches was having different security algorithms to encode image, and here this work promises to enhance the safety better than previous methods need to maintain that security levels must be increased to make the encryption more robust and reliable. Above idea is making strong system and ciphered image is not able to guess. In the proposed encryption system security levels are here divided in parallel security also, which multiplies the security means all the layers RGB are encrypted divergently. The simulation steps will clearly shows the strength of proposed methodology and average of entropy for scope, leena, baboon is 7.9995 for all three R, G and B. the NPCRs of Encrypted Images is 99.67243, 99.61978 and 98.69395 for R, G and B respectively. The UACIs of Encrypted Images is 27.6398, 27.2161 and 29.0811 for R, G and B respectively Encryption ensures secrecy in essential information exchange, for example, those of spies, military, pioneers, and ambassadors. In late decades, the field of encryption gives instruments to something other than keeping privileged insights: plans like advanced marks and computerized money for instance. also, encryption has come to be in across the board use by numerous regular people (not military individuals) who don't have remarkable requirements for secrecy, although typically it is straight forwardly incorporated with the foundation and broadcast communications. Hypothetically, compression and encryption are inverse: while encryption changes over a few decipherable information into a few unintelligible information, compression looks for overt repetitiveness or patterns in information to be dispensed with to get a decrease of information. Recently, the field of Internet of Things (IoT) has seen rapid growth. The increasing reliance on this technology in household and financial applications has made it. It is essential to pay attention to the security of information sent through these IoT applications. The present article proposes a new encryption method for important messages sent via IoT applications.

Intrusion Detection System Based on Particle Swarm Optimization in Mobile Ad-hoc Network: A Survey

Shruti Dixit[1], Navneet Kaur[2], Shalini Sahay[3], M. Fatima[4], Aaradhna Soni[5]

[1]Associate Professor, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[2,3,4]Professor, Sagar Institute of research and Technology, Bhopal (SIRT)
[5]Assistant Professor, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]*shruti.d@sageuniversity.edu.in,* [2]*navec2000@gmail.com,* [3]*shalinisahay2020@gmail.com,*
[4]*mehajabeen.fatima2021@gmail.com,* [5]*aaradhna.s@sageuniversity.edu.in*

Mobile Ad-hoc network (MANET) is the assortment of cooperative wireless nodes without existence of any access point or infrastructure. Due to problems like wireless radio, limited battery power, limited bandwidth and dynamic topology environment, nodes are susceptible for intrusion and attack. Security is an important field in this type of network. Each node in a MANET is capable of acting as a router. Routing and routing protocols are important aspects having various security concerns. Intrusion detection systems (IDS) in MANETs aim to identify malicious activities, such as attacks on routing protocols, packet dropping, and other anomalies. The bio-inspired approach known as Particle Swarm Optimization (PSO) based on Swarm Intelligence (SI) is suggested for finding solution against attacks in the network. PSO is a nature-inspired optimization algorithm that simulates the social behavior of individuals in a swarm. It is commonly used to find optimal solutions in complex search spaces. A survey of different types of attacks are presented and intrusion detection (ID) mechanisms based on PSO is discussed. The survey consolidates existing knowledge on the integration of PSO in Intrusion Detection Systems within MANETs. By offering a comprehensive overview, critical analysis, and future research directions, this work contributes to the ongoing efforts to enhance the security posture of MANETs in the face of evolving cyber threats.

Analysis of Parallel-Series Compensation Circuit for Wireless Power Transfer of Electric Vehicle Charging Based on Resonant

Aaradhna Soni[1], Shruti Dixit[2], Nivedita Singh[3]

[1,3]Assistant Professor, [2]Associate Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]*aaradhna.s@sageuniversity.edu.in,* [2]*shruti.d@sageuniversity.edu.in,* [3]*niveditasingh7653@gmail.com*

Resonant wireless power transfer is a way of transferring electricity that does not require a wire to connect the transmitting and receiving coils. A power electronics converter is present on both sides. On the transmitting side, a cascaded single phase full bridge inverter is connected to a resonant wireless power transfer circuit, which is fed through the grid and connected to a power factor correction rectifier to boost power factor or make up for reactive power in order to lower the amount of input VA required. A resonant wireless power transfer operates on the resonance principle, in which maximum power is sent wirelessly to the receiving side. A parallel series connection is employed in this resonant WPT circuit, one of four topologies based on how capacitance is connected: either in series or in parallel. When high power charging is needed, a resonant power transfer circuit is employed because it can send power over longer distances than inductive power transfer. The quality factors of the transmitting and receiving sides as well as the effective coupling factor of the coil all affect Resonant WPT's efficiency.

A Comprehensive Review of Materials and Preparation Methods for Thin Films in Solar Applications

Priyanka Gupta

Assistant Professor, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
priyanka.g@sageuniversity.edu.in

The development of thin films incorporating a spectrum of organic and inorganic materials, such as fullerenes, polymers, metal oxides, and perovskites, represents a pivotal stride toward the next era of solar cell innovation. Third-generation solar cells, diverging from the conventional reliance on silicon, harness an array of novel materials, including solar inks produced through traditional printing press technologies, solar dyes, and conductive plastics. Innovative solar cell designs leverage plastic lenses or mirrors to focus sunlight onto a minute yet highly efficient piece of photovoltaic (PV) material, characterized by its elevated cost and minimal quantity requirements, rendering it widely adopted by various industries. Thin film solar cell emerges as the most promising avenue for reducing the costs associated with photovoltaic systems. The thin film technology offers manifold advantages, including simplicity, reduced material consumption, and a diverse array of methods for preparing thin films. This paper extensively explores different techniques employed in the preparation of thin films, providing a comprehensive discussion of their respective advantages and disadvantages.

A Comprehensive Study of AI Based Non-Orthogonal Multiple Access for Wireless Network

Seema Patidar

Assistant Professor, CSE IIST, Indore
seema.patidar80@gmail.com

Wireless mobile communication is an essential part of modern life. In wireless communication it is required to address the demand of high data rates, low latency and high reliability. This demand of high data rates, low latency and high reliability arises due to rapidly growing machines, devices engaging the insufficient radio spectrum. The coming decades also will be of the advanced machines, IoT based application, mobile application etc. with great efficiency. The demand of such huge bandwidth cannot be supported by the existing technology. Because of this reason it is essential to increase the frequency band as well as to use these frequency bands effectively and efficiently. In this context NOMA is a potential technology which uses frequency bands effectively and efficiently. To take the benefits of NOMA in optimal manner use of deep learning techniques for power allocation is required. With large number of communicating devices the performance of wireless communication can be improved by integrating the two techniques i.e. non orthogonal multiple access (NOMA) with deep learning techniques. Deep Learning is advantageous for changing channel conditions detection effectively and training input signals. Researchers already proved that the use of deep learning techniques to resource allocation, beam forming, clustering of users in NOMA is paramount for the 5G and B5G (Beyond 5G) wireless communication system. In this paper a comprehensive survey is done on various techniques of AI (Artificial Intelligence).

Investigating the Effects of Admixtures and Curing Conditions on Self-Compacting Concrete

Vishal Bhatt[1], Sanjeev Kumar Verma[2]

[1]PhD Research Scholar, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal,
[2]Professor, SAM Global University, Raisen
[1]vishal2006bhatt@gmail.com, [2]sanjeevapm@gmail.com

This paper presents a comprehensive investigation into the effects of admixtures and curing conditions on the performance of self-compacting concrete (SCC). With the growing demand for innovative and sustainable construction materials, understanding the intricate interactions between various parameters is crucial for optimizing SCC properties. The experimental study encompasses a range of SCC mixes designed to explore the influence of different admixture types and dosages on both fresh and hardened concrete characteristics. Admixtures, including super-plasticizers, viscosity-modifying agents, and stabilizers, are systematically varied to analyze their impact on workability, flow ability, and mechanical properties. Additionally, the research investigates the effects of curing conditions on SCC, considering variations in temperature, humidity, and alternative curing methods. The findings contribute to the development of a comprehensive model that elucidates the synergies and trade- offs associated with different curing approaches.

Determining the Effect of Plastic Granules on the Performance of Concrete

Sapna Verma[1], Sanjeev KumarVerma[2]

[1]PhD Research Scholar, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[2]Professor, SAM Global University, Raisen
[1]sapnaverma10@gmail.com, [2]sanjeevapm@gmail.com

Recycling of plastic is essential in today's condition. Incorporating the waste plastics in concrete and converting them into aggregates is one of the possible solutions to consume them. In the present work utilization of waste Low Density Polyethylene (LDPE) granules as partial replacement of coarse aggregate and its mechanical behavior is investigated. Present work aims at use of recycled plastic in concrete as a partial replacement of Coarse aggregate and Cement. The waste plastic of LDPE is collected and mixed with OPC in different proportions as replacement of coarse aggregates. The workability, compressive strength and split tensile test for each variant were determined.

Experimental Investigation on the Effect of Accelerated Carbonation Curing on Concrete Properties

Pankaj Rathore[1], Sanjeev KumarVerma[2]

[1]PhD Research Scholar, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[2]Professor, SAM Global University, Raisen
[1]pankajrathore19@gmail.com, [2]sanjeevapm@gmail.com

Accelerated carbonation curing (ACC) is a new technique for curing of concrete that entails sequestering carbon dioxide gas into freshly cast concrete, resulting in the improvement of concrete characteristics. This paper presents the experimental results of an investigation into the effects of Accelerated Carbonation Curing on the properties of concrete. The study focused on a Portland cement-based concrete mix with a water-to-cement ratio of 0.4, consisting of crushed stone as aggregate and no admixtures. The initial concrete properties, including compressive strength (40 MPa), modulus of elasticity (30 GPa), and water absorption (5%), served as the baseline for comparison. ACC testing was conducted with varying CO_2 pressure (ranging from 10 psi to 60 psi) and duration (ranging from 1 hour to 10 hours). The experimental results revealed changes in compressive strength, modulus of elasticity, and water absorption compared to a control sample with no ACC.

Evaluating Landscape Transformations in the Upper Lake Bhopal Catchment Area Through Patch Analysis

Ajit Kumar Jain[1], Sanjeev Kumar Verma[2]

[1]PhD Research Scholar, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[2]Professor, SAM Global University, Raisen
[1]erajitjain@gmail.com, [2]sanjeevapm@gmail.com

Anthropogenic activities impart serious challenges on wetland management. The issues of Anthropogenic Activities manifest in the form of environmental degradation, point and nonpoint source pollution of lake water. Catchment area of upper lake Bhopal has been witnessing the same scenario; raising the question of its planning and management to control water pollution. It shows the necessity to analyse and study the pattern of land use & land cover (LULC). In order to assess the LULC pattern and spatio-temporal dynamics the changing pattern of patch number (NP), class area (CA), mean patch size (MPS), mean shape index (MSI), Shannon's Diversity index (SHDI), Simpson's Diversity Index (SDI) of all land use/land cover categories. In this research paper above mentioned parameters were measured and analyzed for landuse/landcover change from year 2003 to 2011. Area of agriculture and built-up land expanded 16.18% and 4.77% while number of patches reduced by 332 and 187 for these two classes respectively. On the other hand, class area of vegetation and barren land reduced 9.33% and 11.62%. Few patches of vegetation completely eliminated resulted in reduction of number of patches by 1250. Increased no. of patches of barren land by 150 shows fragmentation. Reduction in diversity indices indicates that area becomes less diversified during study period. During the period of 2003 to 2011 shape of patches of agriculture and built-up land becomes more complex and that of barren land and vegetation converted to simpler shape. These indices provided meaningful insights pertaining to the spatio-temporal dynamics prevailing in the catchment area of Upper Lake Bhopal. Keywords Catchment, Landscape Indices, Patch parameters, spatio-temporal dynamics, Landscape dynamics.

Towards Safer Roads: A Framework for Analyzing and Improving Road Safety Performance

Laxmi Nrayan Malviya[1], Sanjeev KumarVerma[2]

[1]Ph.D. Research Scholar, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal,
[2]Professor, SAM Global University, Raisen
[1]lnmalviya@lninfra.com, [2]sanjeevapm@gmail.com

The objective of this research project is to develop a comprehensive framework for road safety performance indicators utilizing statistical modeling techniques. The framework is designed to assess road safety conditions, identify influential factors, and contribute to evidence- based interventions. Through the collection and analysis of data on road traffic accidents, infrastructure, traffic volume, and driver behavior, statistical models are employed to unveil relationships between variables and road safety outcomes. The paper discusses the development process, application feasibility, and potential impacts on road safety strategies.

Sustainability of a Civil Infrastructure: Based on Life-Cycle Cost

Ratnapriya Devda[1], Sanjeev KumarVerma[2]

[1]PhD Research Scholar, Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[2]Professor, SAM Global University, Raisen
[1]priyaratna125@gmail.com, [2]sanjeevapm@gmail.com

A well-maintained infrastructure is a fundamental necessity for a modern society that provides great value, but ensuring that it meets all the requirements sustainably and cost-effectively is challenging. Concrete as a construction material is in use for several decades. Conventionally civil structures are designed considering only the initial construction cost and target compressive strength. Regular maintenance of concrete structures is significant to maintain the performance of structures. Hence, methodologies are required to find out the expected maintenance required.

Drinking and Irrigational Suitability of Subsurface Groundwater of The Halali River Basin, in Parts of Raisen and Bhopal Districts

M.P. Mohd. Monis Khan

Research Scholar, Department of Geology, Govt. MVM, Bhopal
08khan.monis@gmail.com

Present study is an attempt to evaluate the suitability of sub-surface groundwater around Halali River basin as part of Bhopal, Raisen districts of Madhya Pradesh. Geologically, the area is mainly composed of two rock type viz. sandstone of Bhander Group and the Deccan Trap basalt. The analysis of parameter like pH and EC measured for these waters indicate mildly alkaline nature and mild electrical conductivity respectively. The value of TDS and Total Hardness are also in good permissible limits. Two major anions Na and K show higher concentration and HCO3 as dominant major anion, F, SO4 and NO3 are also well within the permissible limits. The comparison of analysed the calculated values with the standards proposed by WHO and BIS for drinking water suitability suggests that the water is fit for drinking. Various irrigational suitability parameters like soluble sodium percent, sodium adsorption ratio, Kelly's ratio and permeability index show its suitability for irrigational use. The plotting on Wilcox diagram let out that the subsurface water is S1 (low sodium) and C2-C3 (medium to high salinity) type and belongs to alkaline - bicarbonate facies type.

Experimental Assessment of Strength Characteristics in Steel Fiber Reinforced Recycled Aggregate Concrete

Bharti Ahirwar[1], Harsh Rathore[2]

[1]M.Tech Research Scholar, [2]Assistant Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]bhartiahirwar863@gmail.com, [2]harsh.r@sageuniversity.edu.in

Construction and Demolition (C&D) waste constitutes a significant portion of the global solid waste production, with a considerable amount ending up in landfills. Researchers in concrete engineering have proposed the viable option of recycling and repurposing this waste as aggregate for new concrete. Recycling involves processing used materials to create new products, presenting an effective solution to manage excess waste without compromising quality. Advanced technology enables the exploration of sustainability, emphasizing environmental preservation and the conservation of depleting natural resources. It is a well-established fact that concrete exhibits weakness in tension. To address this limitation, the mechanical properties of concrete can be enhanced through the incorporation of fibers. The effectiveness and performance of Fiber Reinforced Concrete (FRC) rely on both concrete and fiber properties. Key aspects of fiber properties under research include fiber concentration, geometry, orientation, and distribution. The introduction of fibers in concrete serves to control cracks, prevent crack coalescence, and alter material behavior by enhancing ductility.

Performance Analysis of Reinforced Geopolymer Concrete Slabs Incorporating Micro and Macro Steel Fibers

Kshama Lovanshi[1], Harsh Rathore[2]

[1]M.Tech Research Scholar, [2]Assistant Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]kshamaa0@gmail.com, [2]harsh.r@sageuniversity.edu.in

Concrete stands as the predominant construction material in civil engineering, comprising cement, water, and coarse and fine aggregates. The escalating demand for cement, driven by rapid urbanization and infrastructure enhancements, has prompted extensive research into alternative materials. One such innovation is Alkali-Activated Aluminosilicate materials, pioneered by Glukhovsky in the 1950s and globally spotlighted by Davidovits in 1970 as Geopolymer (GPC). Geopolymer, consisting of alkaline activators, source materials (fly ash, GGBS, metakaoline, rice husk ash, etc.), and aggregates, has garnered attention for its potential in sustainability and reduced $CO2$ emissions during manufacturing. The present study will focus on steel fiber-reinforced Geopolymer concrete in two-way slab elements, assessing strength and stiffness properties. The Geopolymer concrete incorporates micro and macro steel fibers, with base materials being fly ash and GGBS, and alkali activators as NaOH and Na2SiO3. Experimental investigations will involve testing slabs under two different loadings—four points and single point concentrated loads—with two edge conditions: all sides simply supported and all sides fixed.

Investigating Flexural Behavior in Cyclic Loading of Fly Ash-Based Green Concrete

Mihir Joshi[1], Harsh Rathore[2]

[1]M.Tech Research Scholar, [2]Assistant Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]mihirjoshi1100@gmail.com, [2]harsh.r@sageuniversity.edu.in

Geopolymer, a promising alternative to ordinary Portland cement, has been extensively studied under monotonic loading conditions, but real-world structures face repeated cyclic loadings. This research delves into the behavior of geopolymer concrete subjected to uniaxial cyclic compressive loading and explores the flexural characteristics of Geopolymer Reinforced Concrete (GPRC) beams under cyclic and low cycle fatigue loading. The experimental study will involve 20-cylinder specimens, analyzing stress-strain envelopes, common points, and stability points under cyclic loadings. Mathematical expressions for cyclic stress-strain curves are proposed based on non-dimensional plastic deflections. The investigation will further extends to the flexural behavior of GPRC and reinforced concrete (RC) beams, assessing structural responses at different load stages. Parameters such as load-carrying capacity, stiffness, ductility, and energy dissipation are determined and correlated with plastic deflections. The study includes slow cycle fatigue testing, aiming to confirm permissible load levels to prevent strain accumulation. The findings will reveal distinct behavior between RC and GPRC beams under cyclic loading, providing valuable insights into their performance under various conditions.

Recycled Aggregate Concrete: Exploring Material Behavior and Performance

Ashish Singh[1], Harsh Rathore[2]

[1]M.Tech Research Scholar, [2]Assistant Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]ashishssingh700@gmail.com, [2]harsh.r@sageuniversity.edu.in

In the contemporary era, there has been a significant surge in construction activities globally over the past few decades. The dismantling of existing structures inevitably leads to the generation of construction and demolition (C&D) waste, posing environmental challenges in terms of disposal. Notably, this waste includes concrete materials, which hold the potential for utilization as aggregates in the production of second-generation concrete. The primary aim of this study is to efficiently employ this material as recycled aggregate, replacing conventional aggregates in specific proportions to produce durable M25 grade concrete. To attain this goal, an investigation into the characteristics of recycled aggregates sourced from ten different locations in Madhya Pradesh has been conducted. The selection of mix proportions for recycled aggregate concrete depends on these distinct properties of recycled aggregates. The study involved testing 186 specimens, exploring the replacement of 0%, 50%, 60%, and 100% of normal aggregates with recycled aggregates. Through the application of the mix design methodology developed in this study, substituting 60% of normal aggregate with recycled aggregate of a maximum size of 20 mm resulted in achieving the desired compressive strength.

Enhancing Flexural Properties in Ferro-Geopolymer Composite Elements

Rishabh Tiwari[1], Harsh Rathore[2]

[1]M.Tech Research Scholar, [2]Assistant Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]rishabh.tiwari678@gmail, [2]harsh.r@sageuniversity.edu.in

This research aims to contribute to the advancement of sustainable construction practices by investigating the properties and applications of geopolymer mortar and ferro-geopolymer composite structures. The methodology involves a comprehensive literature review, data collection, material procurement, mix design, specimen preparation, and testing to evaluate the flexural behavior. Anticipated outcomes include the determination of an optimized geopolymer mortar mix proportion, a comparative analysis of compressive strength under different curing conditions, and insights into the strength and behavior of ferro-geopolymer composite structures. The study also seeks to develop predictive models for key parameters and offer practical guidelines for construction applications. Validation of these models and the dissemination of findings through academic publications contribute to the broader scientific community and promote sustainable construction practices. Overall, this research aims to enhance our understanding of geopolymer technology and ferrocement, providing valuable insights for practical applications in the construction industry.

Insights into the Structural and Optical Characteristics of CuO Nanoparticles Fabricated via Sol-Gel Method

Maheshwari Rahangdale[1], Mayuri Chourey[2], Aditya Bhatt[3]

[1,2]PhD Research Scholar, [3]Assistant Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]maheshwari2407r@gmail.com, [2]mayurichourey@gmail.com, [3]aditya.b@sageuniversity.edu.in

The study focuses on the synthesis and characterization of nanostructured CuO compounds using the sol-gel method. The investigation delves into the structural, morphological, chemical, and optical properties of CuO nanoflowers through a comprehensive array of characterization techniques. X-ray diffraction (XRD) analysis demonstrates the pure monoclinic phase formation of CuO nanoparticles, providing critical insights into their crystallographic structure. The microstructure, surface morphology, and composition of the as-prepared CuO nanoparticles were further examined using scanning electron microscopy (SEM) and Fouriertransform infrared spectroscopy (FTIR), revealing a detailed understanding of their physical and chemical attributes. Moreover, the study explores the optical properties of CuO nanoflowers through UV–vis diffuse reflectance spectroscopy and photoluminescence (PL) measurements. UV–vis spectroscopy elucidates the optical absorption characteristics, while PL results reveal the presence of distinct blue-green and yellow emissions. The discussion delves into the relationship between PL emission and lattice defects, providing valuable insights into the nanomaterial's electronic structure. This multidimensional analysis contributes to a comprehensive understanding of CuO nanoflowers, paving the way for potential applications in diverse fields, including optoelectronics and catalysis.

Comprehensive Insights into the Synthesis, Structural, and Photocatalytic Properties of YFeO3 nanoparticles

Mayuri Chourey[1], Maheshwari Rahangdale[2], Aditya Bhatt[3]

[1,2]PhD Research Scholar, [3]Assistant Professor
Sanjeev Agrawal Global Educational (SAGE) University, Bhopal
[1]mayurichourey@gmail.com, [2]maheshwari2407r@gmail.com, [3]aditya.b@sageuniversity.edu.in

The study delves into the synthesis of nanostructured YFeO3 utilizing the ultrasonication assisted sol-gel technique, with a specific emphasis on elucidating its promising photocatalytic properties. The structural attributes of the synthesized material were rigorously examined using X-ray diffraction, resulting in a well-indexed profile that offered insights into its crystalline nature. Further analysis of scanning electron microscopy images revealed a particle size distribution of approximately 50 nm, underscoring the nanostructured morphology. The mono-phase composition was corroborated through Fourier-transform infrared and Raman spectra, while UV-Vis spectroscopy disclosed a direct energy band gap of 1.85 eV, indicating its potential for efficient light absorption. In addition to its structural and optical characteristics, this study explored the practical application of YFeO3 in photocatalysis, specifically focusing on its ability to degrade Methylene Blue under visible light conditions. The investigation into photocatalytic efficiency provides valuable information about the material's performance in environmentally relevant processes. The findings contribute to a comprehensive understanding of YFeO3's potential as a photocatalyst, offering insights that may have implications for its utilization in sustainable and eco-friendly technologies.

LIST OF PROJECTS

E.X.X.R - XR Interaction in Oculus (Software)

Abhinav S, Arihant Pal, Kopal Vishwakarma
BCA (Cloud Computing – V)

This abstract underscore the integral role of innovative interactions, specifically distance grabbing, within the developmental framework of a cutting-edge Virtual Reality (VR) simulation. The primary emphasis is directed towards the pursuit of heightened realism through the strategic deployment of advanced interactions, ultimately enriching the holistic user experience. The intricacies of the simulation design are meticulously tailored to closely mirror reality, engendering a seamless and immersive environment that maximizes efficacy within training scenarios. The comprehensive approach not only fortifies the proficiency of military personnel but also yields substantial resource savings by obviating the need for conventional dummy artillery production. This synthesis of state-of-the-art technology, nuanced design principles, and resource-conscious strategies positions the VR simulation as a pivotal advancement in modern warfare training methodologies. At its core, the incorporation of distance grabbing as an interactive feature signifies a quantum leap in user engagement. This innovation transcends the traditional boundaries of simulation, fostering a dynamic and responsive training environment. The user's ability to engage with elements at a distance brings a level of authenticity previously unattainable. This advanced interaction is seamlessly integrated, enhancing the user experience by instilling a sense of spatial awareness and promoting tactical acumen. The commitment to achieving heightened realism permeates every facet of the VR simulation. From the intricacies of environmental design to the nuanced behaviours of virtual entities, the simulation meticulously replicates the complexities of real-world scenarios. By leveraging advanced interactions, the user is not merely an observer but an active participant in dynamic, true-to-life situations. The virtual environment becomes a canvas for honing skills, refining decision-making processes, and developing muscle memory. In doing so, the simulation emerges as a powerful tool in preparing military personnel for the unpredictable and multifaceted nature of contemporary warfare. A crucial aspect of the simulation's design philosophy is to maximize the effectiveness of training scenarios. By prioritizing realism and leveraging advanced interactions, the simulation becomes a dynamic training ground for soldiers to hone their skills and adapt to rapidly evolving situations. The emphasis on practicality ensures that the training is not just theoretical but translates seamlessly into real-world applications. Notably, the implementation of this VR simulation translates into significant resource savings. The traditional reliance on dummy artillery for training purposes becomes obsolete as the virtual environment supplants the need for physical props. This not only streamlines logistics but also contributes to a more sustainable and cost-effective training paradigm. The resource-conscious strategy enhances the scalability and accessibility of the training program, allowing for broader integration within military training facilities.

Zombie Nexus: Apocalypse Unleashed (Software)

Rashil Yadav

BCA (Cloud Computing – V)

"Zombie Nexus: Apocalypse Unleashed" presents a revolutionary Unity 3D gaming experience, immersing players in a post-apocalyptic world overrun by relentless zombies. This dynamic survival adventure challenges players to navigate perilous environments, strategically complete objectives, and escape the relentless undead hordes. At its core, the game embodies an unparalleled blend of cutting-edge technology, captivating storytelling, and visual excellence. Visual Excellence with Post-Processing: The game distinguishes itself through the integration of advanced post-processing effects, delivering a visually stunning and atmospheric experience. From realistic lighting to dynamic environmental effects, "Zombie Nexus" leverages post-processing to create an immersive world that intensifies the player's connection with the narrative. Unique Characters and Dynamic Objectives: Players embark on their survival journey with a choice of three unique characters, each equipped with distinct strengths and abilities. The gameplay unfolds through a series of dynamic objectives, requiring strategic planning to acquire essential tools, starting with a crucial rifle that becomes the linchpin to their survival. Seamless WebGL Gameplay: "Zombie Nexus" breaks new ground by utilizing WebGL technology, allowing seamless gameplay directly through web browsers. This not only eliminates the need for extensive downloads but also makes the game globally accessible. The WebGL build showcases the game's detailed graphics and post-processing effects directly within the browser, offering an immersive experience without compromising on visual richness. Global Accessibility: With a commitment to transcending hardware limitations, the game's deployment on WebGL ensures global accessibility. Players worldwide can enjoy the gripping experience without the constraints of system specifications, making "Zombie Nexus" a truly inclusive and widely available gaming sensation. Minimap and Situational Awareness: A dynamic minimap enhances player situational awareness, displaying the entire environment and the relentless approach of zombies from all directions. This crucial tool empowers players to strategically plan their movements, escape routes, and encounters to successfully complete the challenging objectives. Conclusion: "Zombie Nexus: Apocalypse Unleashed" is not merely a game; it's a technological marvel, a visual spectacle, and an immersive journey through a post-apocalyptic world. The game's unique blend of post-processing, character dynamics, and global accessibility through WebGL showcases a commitment to delivering an unparalleled gaming experience. As players step into this apocalypse, "Zombie Nexus" stands as a testament to the future of gaming, where innovation meets visual excellence, creating a world where survival is not just a goal but an unforgettable experience.

Agri_AI (Software)

Priyanshu Gour[1], Abhay Gupta[1], Shivam Ahirwar[1], Sarthak Jain[2]
[1] BCA (Cloud Computing – III)
[2] B.Tech (Artificial Intelligence – III)

AgriAI stands at the forefront of agricultural innovation, harnessing the power of machine learning to optimize crop and fertilizer recommendations based on soil features. This cutting-edge web application seamlessly integrates React and Flask, creating a user-friendly interface that empowers farmers to make informed decisions for enhanced crop yield. Key Features: AgriAI boasts three meticulously crafted prediction models, each contributing to the precision of its recommendations. By amalgamating diverse datasets and employing advanced machine learning techniques, the application ensures accurate and reliable results for farmers seeking optimal crop and fertilizer choices. Technology Stack: The backbone of AgriAI is a robust Flask API, meticulously crafted to handle incoming data and provide predictions seamlessly. The deployment on Heroku ensures accessibility and scalability. The React framework enhances the user experience, offering an intuitive and responsive interface. Workflow: Users interact with AgriAI by submitting soil features via a user-friendly interface. This data is then transmitted to the Flask API through a POST request, invoking the power of the machine learning models. The results are delivered in a comprehensible JSON format, aiding farmers in making informed decisions. Machine Learning Models: AgriAI's strength lies in its trio of accurately predicting models. These models are finely tuned to analyse soil features and generate recommendations that are both precise and reliable. The amalgamation of these models culminates in a comprehensive prediction that serves as a valuable guide for agricultural practices. Flask API Deployment: The Flask API, a critical component of AgriAI, is hosted on Heroku, ensuring 24/7 accessibility. This deployment strategy not only facilitates seamless integration with the React front-end but also guarantees a reliable and responsive experience for users. User Interface: AgriAI's React-based user interface is designed with simplicity and functionality in mind. The intuitive layout ensures that farmers can easily input their soil data, receive predictions, and make informed decisions promptly. The visually appealing design enhances user engagement and accessibility. Conclusion: AgriAI is not merely a web application; it is a revolutionary tool that empowers farmers with data-driven insights. By harnessing the capabilities of machine learning, AgriAI is poised to transform agriculture, optimizing crop and fertilizer choices for a more sustainable and productive future. Future Developments: AgriAI is a dynamic project with the potential for continuous improvement. Future developments may include the incorporation of additional soil features, expansion of the machine learning models, and integration with real-time weather data to further refine recommendations. In conclusion, AgriAI represents a significant leap forward in agricultural technology, merging the realms of machine learning and agriculture to empower farmers and cultivate a more sustainable and productive future.

In-Cab Smart Guidance for Dragline Operator (Hardware)

Sanjali Khare[1], Tanya Shekhawat[1], Sumit Choudhary[2], Prateek Khatri[2]

[1]B.Tech (Artificial Intelligence – V), [2]B.Tech (CSE – V)

A proposed smart guidance and support system for draglines aims to enhance operator capabilities through real-time information, alerts, and guidance, improving safety, efficiency, and overall project success. Key features include environmental awareness for hazard detection, operational guidance for precision and optimization, performance monitoring for continuous improvement, training modules for skill development, and seamless integration with existing systems. This empowers operators for informed decision-making and optimizes dragline operations in mining and construction.Real-time Environmental Awareness: Utilizing computer vision and sensors, the system detects and alerts operators about potential hazards (nearby equipment, uneven terrain, approaching vehicles) for enhanced safety. Operational Guidance and Monitoring: Intuitive visual cues and instructions, delivered through displays or augmented reality, guide operators towards precise digging, loading, and dumping, minimizing material loss and maximizing productivity.Performance Monitoring and Analysis: Data on cycle times, digging depth, fuel consumption, and maintenance needs fuels continuous improvement by providing invaluable feedback and performance metrics.Operator Training and Skill Development: Interactive virtual scenarios, real-time feedback, and performance benchmarks empower operators to hone their skills, decision-making, and overall efficiency.Integration and Scalability: Seamless integration with existing dragline systems and infrastructure ensures compatibility across different models and manufacturers.

Graphic Designing

Mohammad Elaf Khan

B.Tech (CSE – I)

This project embarks on an ambitious journey to forge a bridge between artistic ingenuity and cutting-edge technology, resulting in the creation of immersive games and captivating animations. By harnessing the strengths of two industry giants, Blender and Unreal Engine 5, we aim to push the boundaries of digital storytelling, crafting experiences that resonate with hearts and minds. At the heart of this project lies Blender, a free and open-source 3D software renowned for its powerful modelling, sculpting, and animation capabilities. Our journey begins within its intuitive interface, where characters, environments, and props will be meticulously shaped into existence. From the intricate details of a protagonist's facial expressions to the vast panoramas of fantastical landscapes, every element will be sculpted with precision and imbued with personality. But the true magic unfolds when these creations cross the threshold into Unreal Engine 5. This powerful game engine acts as the canvas on which our visions are brought to life. Its next-generation features, including Lumen (a dynamic global illumination system) and Nanite (real-time rendering of virtualized geometric detail), promise breathtaking visuals that blur the lines between reality and imagination. Through meticulous optimization and creative lighting, we'll harness the engine's potential to evoke awe and wonder in players and viewers alike. Within this realm of innovation, two distinct paths diverge: interactive games and captivating animations. In the domain of games, we'll craft narratives that draw players into captivating worlds brimming with challenges and adventures. Whether it's a thrilling first-person shooter or a heart-wrenching story-driven journey, we'll utilize advanced gameplay mechanics and intuitive controls to forge an unforgettable connection between player and game. The animation branch embarks on a different yet equally mesmerizing journey. Our focus here lies in weaving compelling narratives through the art of motion. Whether it's a short film brimming with emotion or a quirky commercial bursting with life, we'll breathe life into our characters, imbuing their movements with a sense of purpose and personality. The powerful animation tools within both Blender and Unreal Engine 5 will allow us to achieve a level of fluidity and expressiveness that resonates with audiences on a deeper level.
This project transcends the boundaries of mere technical wizardry. It aspires to be a conduit for creative expression, where our team's artistic vision intermingles with the technological prowess of industry-leading software. Through dedicated collaboration and constant refinement, we aim to deliver interactive experiences and animated stories that leave a lasting mark on players and viewers, reminding them of the boundless possibilities that lie at the intersection of creativity and technology. This journey isn't merely about constructing pixelated landscapes and polygonal characters. It's about crafting worlds that captivate, stories that move, and experiences that linger long after the final frame. It's about harnessing the power of technology to amplify the human touch, leaving behind a legacy of digital art that speaks to the hearts and minds of all who encounter it.

Carbhasha-Innovative Fleet Management (Software)

Bhavik Nerkar, Anurag Kumar Gupta, Shanvi Soni, Sonu Kumar Shah
B.Tech (CSE – III)

In today's competitive transportation landscape, fleet managers face the constant pressure of optimizing performance, maximizing uptime, and ensuring driver safety. Traditional fleet management systems offer valuable data insights, but often lack the engagement necessary to drive sustained improvement. This abstract proposes a novel approach: a gamified fleet management dashboard that revolutionizes fleet management through playful competition and real-time data visualization.

The Problem: Information overload within traditional dashboards can overwhelm drivers and managers, leading to data fatigue and disengagement. Compliance adherence, fuel efficiency, and safety become mere numbers on a screen, failing to spark the intrinsic motivation needed for sustained behavioural change.

The Solution: Our gamified fleet management dashboard transforms data into a dynamic, interactive experience. Drivers compete against colleagues in friendly challenges, earning points and badges for achieving eco-friendly driving habits, exceeding safety protocols, and optimizing routes. Real-time leaderboards and visually engaging dashboards provide immediate feedback, fostering a sense of accomplishment and healthy competition.

Key Features: Personalized Dashboards: Each driver receives a customized dashboard highlighting their performance metrics, gamified challenges, and personalized coaching tips. Engaging Challenges: Daily and weekly challenges encourage eco-friendly driving, safe practices, and route optimization, awarding points and badges for top performers. Real-time Leaderboards: Foster a healthy spirit of competition with dynamic leaderboards showcasing individual and team rankings, adding a layer of social motivation. Interactive Data Visualization: Transform data into visually engaging charts and graphs, making complex metrics easily digestible and actionable. Coaching and Feedback: AI-powered coaching modules provide personalized feedback and recommendations based on individual driving patterns, helping drivers improve performance.

Benefits: Increased Driver Engagement: Gamification fosters intrinsic motivation, leading to sustained improvements in driving behavior, fuel efficiency, and safety. Improved Data Utilization: Data becomes actionable through gamified challenges and personalized insights, empowering drivers to make informed decisions. Enhanced Safety Culture: The focus on safe driving practices within the gamified environment promotes a culture of safety throughout the fleet. Reduced Operational Costs: Improved fuel efficiency, optimized routes, and reduced accidents lead to significant cost savings for fleet operators. Valuable Data Insights: The gamified platform generates rich data on driver behavior and fleet performance, enabling managers to make data-driven decisions.

Conclusion: The gamified fleet management dashboard is not just a tool; it's a cultural shift. By transforming data into a fun and engaging experience, this innovative approach unlocks the power of intrinsic motivation, driving sustainable improvements in fleet performance and safety. This playful approach to management holds the potential to revolutionize the transportation industry, creating a win-win situation for drivers, managers, and the environment.

Milk Delivery with Dairy2Door: A Local Milkman Discovery and Subscription Platform

Yogita Bhargava
B.Tech (CSE – VII)

Dairy2Door, a revolutionary web application developed on the MERN (MongoDB, Express.js, React.js, Node.js) stack, is poised to redefine the milk delivery experience for both customers and local milkmen. This innovative platform harnesses cutting-edge features, including geospatial capabilities and JWT-based token authentication, to empower users to effortlessly discover nearby milkmen, subscribe to services, and optimize the milk delivery process. Key Features: 1. Nearby Milkman Search: Dairy2Door differentiates itself by utilizing geospatial capabilities, enabling customers to discover local milkmen based on proximity. This feature provides a seamless and efficient means for users to connect with nearby suppliers, greatly enhancing accessibility and convenience. 2. User-friendly Registration: Milkmen can effortlessly register on the platform by providing essential details such as their name, contact information, and delivery location. This streamlined onboarding process ensures quick and efficient account creation, minimizing barriers for local milk suppliers. 3. Customer Subscription: A standout feature of Dairy2Door is its customer subscription service. Customers can subscribe to specific milkmen, creating a personalized connection for regular milk deliveries. This not only enhances customer satisfaction but also fosters brand loyalty, establishing a reliable customer base. 4. Secure User Authentication: Dairy2Door employs robust user authentication mechanisms, incorporating advanced features like password hashing and JWT-based token authentication. This commitment to data privacy ensures secure access for both milkmen and customers, building trust and confidence among users. 5. Milkman Discovery Algorithm: The platform incorporates an intelligent algorithm that suggests nearby milkmen to customers based on location, availability, and preferences. This adds a layer of personalization, offering users tailored recommendations and enhancing the overall user experience. Project Components: 1. Milkman and Customer Profiles: Dairy2Door employs comprehensive data models for milkmen and customers, including attributes such as name, contact details, location, availability, and subscription preferences. This holistic approach provides a detailed understanding of user profiles, contributing to a more personalized service. 2. Geospatial Data Handling: Utilizing MongoDB's geospatial indexing and querying capabilities, Dairy2Door efficiently manages the real-time location data of milkmen. This optimization ensures the accuracy of the nearby milkman search feature, providing users with reliable and relevant information. 3. JWT-based Token Authentication: Dairy2Door ensures the security of user access through JWT-based token authentication. This mechanism guarantees that only authenticated users can utilize the platform's features, enhancing the overall security posture of the application. 4. Express.js Backend: The Express.js backend plays a pivotal role in handling user registration, authentication, and orchestrating data interactions between the frontend, MongoDB, and the intelligent milkman discovery algorithm. This ensures smooth communication and data flow, contributing to the platform's efficiency. 5. React.js Frontend: The React.js frontend offers an intuitive and responsive user interface for customers and milkmen. It enables seamless navigation, profile management, and subscription controls, contributing to an enhanced user experience. Conclusion: Dairy2Door emerges as a pioneer in transforming the milk delivery ecosystem through its innovative features that prioritize convenience, efficiency, and customer satisfaction. By leveraging the capabilities of the MERN stack and incorporating geospatial and JWT-based authentication, the platform creates a synergy between local milk suppliers and consumers. Dairy2Door goes beyond being just a web application; it's a testament to the potential of technology in enhancing traditional services, fostering stronger relationships, and optimizing the local milk delivery experience. The platform not only simplifies the process but also elevates it, creating a dynamic and user-centric solution for the evolving needs of the milk delivery industry. With Dairy2Door, the future of milk delivery is at your doorstep.

Skillearnix: Revolutionizing Language Learning through Innovation

Keshav Prajapati, Mansi Goyal
B.Tech (CSE – III)

Skillearnix is a user-friendly language learning software system designed to facilitate an engaging and effective language learning experience. Focused on enhancing language skills, the platform offers a diverse range of exercises, progress tracking, interactive learning experiences, and immediate feedback. The software's key features include a vast question bank, progress monitoring, interactive quizzes, and personalized learning paths.

Skillearnix Highlights: Comprehensive Exercise Library: Skillearnix boasts a vast question bank, providing learners with a wide array of exercises to cater to specific language learning needs.Progress Tracking: The system enables users to monitor their performance, identify strengths and weaknesses, and track improvement over time, offering a clear understanding of their language learning journey. Interactive Learning Experiences: Skillearnix engages users through interactive exercises, quizzes, and activities, making the learning process enjoyable and participatory. Immediate Feedback: Users receive instant feedback on their responses, aiding in understanding mistakes and accelerating the learning process.

Objectives: Engaging and Interactive Learning: Skillearnix aims to create a dynamic learning environment by offering interactive exercises, fostering active participation, and practical application of language skills. Personalized Learning: The system adapts content based on user proficiency, ensuring learners are consistently challenged at an appropriate level. Progress Tracking and Feedback: Skillearnix empowers users to track their progress, receive feedback, and take ownership of their language learning journey. Motivation and Engagement: Incorporating gamification elements, the software motivates learners through rewards, badges, and leaderboards. Widely Accessible Language Learning: Leveraging technology, Skillearnix provides a scalable platform accessible to individuals, institutions, and language centers.

Future Scope: The future of Skillearnix involves potential expansions such as adding more languages, integrating AI and ML technologies, introducing social features, developing a mobile app, integrating external resources, enhancing progress visualization, and forming partnerships with educational institutions.

Conclusion: Skillearnix represents an innovative solution addressing challenges in language learning. By combining technology, personalization, and practical application, Skillearnix empowers users to enhance language proficiency, increase employability, and navigate the complexities of a globalized world.

LIST OF POSTERS

Digital Marketing

Koushal Jatav
B.Tech (CSE – III)

Dive into the essence of digital marketing with this concise poster, focusing on key pillars for contemporary success. Explore the impact of data-driven insights, emphasizing how analytics transforms decision-making and tailors campaigns for targeted engagement. Uncover the latest social media trends, from ephemeral content to influencer collaborations, shaping effective strategies for platforms like Instagram and TikTok. Navigate the intricacies of SEO strategies to enhance online visibility, understanding the critical role of content optimization and backlinks. Learn the art of campaign optimization through analytics, utilizing real-time insights to adapt and refine marketing strategies. Lastly, witness the fusion of creativity and technology, where immersive storytelling and interactive content converge for compelling digital narratives. This poster serves as a succinct guide, providing actionable insights to empower businesses in thriving within the dynamic landscape of digital marketing.

Data Science and Artificial Intelligence (A.I.)

Kumar Sourav, Kumar Ashmit, Kundan Kumar
B.Tech (CSE – III)

The convergence of Data Science and Artificial Intelligence (A.I.) has ushered in a transformative era, reshaping industries and revolutionizing decision-making processes. This abstract explores the seamless integration of data-driven methodologies and advanced A.I. techniques to extract valuable insights, uncover patterns, and derive meaningful predictions.The first aspect of this synergy involves leveraging the power of data science techniques, including statistical analysis and machine learning algorithms, to efficiently process vast and complex datasets..In tandem, Artificial Intelligence, with its capability to emulate human-like cognitive functions, takes center stage in deriving actionable intelligence from the processed data. Supervised and unsupervised learning algorithms, coupled with neural networks and deep learning architectures, empower machines to discern intricate relationships and make predictions with unprecedented accuracy. In conclusion, the collaboration between Data Science and Artificial Intelligence presents a potent force for driving innovation and addressing complex challenges.

Future of AI

Animesh Kumar
B.Tech (Cyber Security & Forensics – I)

The future of Artificial Intelligence (AI) holds immense promise and transformative potential across various domains. As technological advancements continue to accelerate, AI is poised to play a central role in reshaping industries, societies, and the very fabric of human existence. One prominent aspect of the future of AI lies in its increasing ubiquity, moving beyond traditional tech domains into healthcare, finance, education, and more. AI-driven innovations are anticipated to enhance efficiency, productivity, and decision-making processes across industries, paving the way for a new era of automation and optimization. Intelligent systems will likely evolve to be more context-aware, adaptive, and capable of learning from dynamic environments, making them indispensable in addressing complex challenges. In conclusion, the future of AI promises a landscape of unparalleled innovation and societal transformation.

Internet of Things [IoT]

Rajvardhan Malviya
B.Tech (CSE – I)

The Internet of Things (IoT) is a revolutionary paradigm poised to redefine the way we interact with the digital and physical worlds. In this interconnected ecosystem, everyday objects are embedded with sensors, actuators, and communication technologies, enabling them to collect and exchange data seamlessly. The transformative potential of IoT lies in its ability to create a web of smart, responsive devices that enhance efficiency, improve decision-making processes, and elevate the overall quality of life. As the IoT landscape continues to expand, its applications span diverse domains, including healthcare, agriculture, transportation, and smart cities. In healthcare, for instance, IoT devices can monitor vital signs in real-time, enabling timely interventions and personalized healthcare. In agriculture, smart sensors integrated into fields and equipment optimize resource usage, leading to increased yields and sustainability. In conclusion, the Internet of Things represents a paradigm shift with far-reaching implications for how we live and work.

Application Programming Interface (API)

Sunaini Raghuwanshi
B.Tech (CSE – III)

An Application Programming Interface (API) serves as a crucial bridge between software applications, enabling them to communicate and share functionalities. This abstract explores the significance of APIs in fostering interoperability, streamlining development processes, and enhancing system efficiency. It delves into the diverse types of APIs, such as web APIs and library APIs, highlighting their roles in facilitating data exchange and promoting modular software design. The abstract also touches on the challenges associated with API integration, emphasizing the need for robust documentation and standardized protocols. In essence, APIs play a pivotal role in the interconnected digital landscape, empowering developers to create dynamic, collaborative, and seamlessly integrated applications.

Quantum Computer

Bhoomi Sahu
B.Tech (CSE – I)

Quantum computing stands at the forefront of a technological revolution that could redefine the limits of computational power. Unlike classical computers that rely on bits to represent either a 0 or a 1, quantum computers leverage Qubit, which can exist in a superposition of states, allowing for parallel processing and an exponential increase in computational capacity. In the realm of cryptography, quantum computers pose both a threat and a solution. They have the ability to efficiently crack widely-used encryption algorithms, prompting the need for quantum-resistant cryptographic methods. Simultaneously, quantum key distribution, enabled by the principles of quantum mechanics, offers a fundamentally secure way to exchange cryptographic keys, ensuring the privacy of communications. This includes complex scenarios in logistics, finance, and artificial intelligence where vast sets of possibilities need to be explored simultaneously.

Artificial Device

Avinash Singh, Shivani Kushwaha
B.Tech (Artificial Intelligence – III)

An artificial device refers to a human-made, non-biological system designed to perform specific functions or tasks. These devices often integrate advanced technologies, such as microprocessors, sensors, and actuators, to emulate or enhance human capabilities. From smartphones to sophisticated robots, artificial devices encompass a wide spectrum of applications. The concept of artificial devices extends beyond physical gadgets to include software systems, artificial intelligence (AI), and machine learning algorithms, shaping the landscape of modern technology. Artificial devices play a pivotal role in various industries, contributing to advancements in healthcare, communication, transportation, and entertainment. As society continues to evolve, artificial devices remain at the forefront of transformative change, driving progress, efficiency, and convenience. Ethical considerations and responsible development practices are crucial in ensuring that these devices align with human values and contribute positively to the overall well-being of individuals and communities.

Gemini AI

Muskan Kahar
B.Tech (CSE – III)

Gemini AI is an exciting development in the field of artificial intelligence. It is an advanced AI system that aims to mimic human-like conversational abilities. Gemini AI is designed to understand and respond to natural language, allowing for more engaging and interactive conversations. One of the key features of Gemini AI is its ability to learn and adapt over time. It can analyze and understand user input, allowing it to provide more personalized and relevant responses. This adaptability makes interactions with Gemini AI feel more natural and human-like. Gemini AI also utilizes machine learning techniques to improve its understanding and response capabilities. It can analyze large amounts of data to identify patterns and trends, enabling it to provide more accurate and helpful information.In conclusion, Gemini AI is an advanced AI system that aims to mimic human-like conversational abilities.

Mobile Addiction: Unravelling the Intricacies of Compulsive Smartphone Use

Ashutosh Sahu
B.Tech (CSE – VII)

The ubiquitous presence of mobile devices has brought unprecedented connectivity and convenience, but it has also given rise to a burgeoning societal concern – mobile addiction. This abstract explores the multifaceted dimensions of this phenomenon, dissecting its causes, consequences, and potential mitigations. At its core, mobile addiction is characterized by an individual's compulsive and excessive use of smartphones, often leading to detrimental effects on mental health, interpersonal relationships, and overall well-being. Drawing on psychological frameworks, this abstract investigates the factors contributing to mobile addiction, including the allure of social media, instant gratification through notifications, and the design principles of applications fostering addictive behaviours. The impact of mobile addiction extends beyond individual well-being, influencing societal dynamics. This abstract concludes by underscoring the importance of collective efforts in understanding and mitigating mobile addiction. By acknowledging its complexity and implementing targeted strategies, society can foster a balanced relationship with mobile technology, ensuring that the benefits of connectivity are maximized without compromising individual and societal mental health.

Generative AI: Unlocking Creativity and Innovation through Algorithmic Ingenuity

Jiyan Khan, Rishabh Hunka
B.Tech (Artificial Intelligence – I)

Generative Artificial Intelligence (Generative AI) represents a groundbreaking paradigm shift in computer science, propelling machines beyond mere computation to creative output. This abstract explores the evolution, applications, and implications of Generative AI, emphasizing its transformative potential across diverse domains. At its core, Generative AI leverages advanced algorithms, particularly deep learning models like Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs), to autonomously produce novel content, ranging from images and music to text and beyond. The ability of these systems to learn and replicate patterns from vast datasets enables them to generate realistic, contextually relevant outputs, heralding a new era in algorithmic creativity. In conclusion, Generative AI stands as a technological marvel with the potential to revolutionize how we create, innovate, and solve complex problems. This abstract shed light on the promising landscape of Generative AI while emphasizing the importance of ethical frameworks to guide its development and deployment, ensuring that the creative power of algorithms aligns with human values and societal well-being.

Artificial General Intelligence (AGI): Navigating the Path to Human-Level Machine Intelligence

Alina Sheikh
BCA (Cloud Computing – I)

Artificial General Intelligence (AGI) represents the apex of artificial intelligence, aspiring to equip machines with the ability to understand, learn, and perform tasks across diverse domains at a level comparable to human capabilities. This abstract provides an overview of the journey toward AGI, examining the challenges, advancements, and implications inherent in the pursuit of machines that possess broad cognitive abilities. The quest for AGI has witnessed significant strides in machine learning, neural networks, and computational power. Deep learning methodologies, coupled with reinforcement learning and transfer learning, have propelled AI systems toward mastering specific tasks. In conclusion, AGI stands as both a technological frontier and an ethical imperative. This abstract encapsulates the multifaceted nature of AGI development, underscoring the necessity of a thoughtful, inclusive approach to guide the evolution of intelligent machines that, when realized, hold the potential to reshape the fabric of society and propel humanity into a new era of possibilities.

Fun with Coding

Ealisha Narware
B.Tech (CSE – I)

Embark on an exhilarating journey into the world of coding with our poster, Fun with Coding. Beyond the traditional perspective, this presentation unveils the joy and excitement embedded in the art of programming. Through an array of engaging projects and interactive experiences, discover how coding becomes a medium for creativity and problem-solving. The poster introduces coding games suitable for beginners, providing a hands-on and enjoyable approach to learning the ropes of programming. Whether you are a novice or an experienced coder, Fun with Coding promises to ignite a passion for programming, demonstrating that learning can indeed be a delightful and enriching experience.

Cloud Computing

Priyanshu Goyal
BCA (Cloud Computing – I)

Experience the paradigm shift brought about by cloud computing in the realm of IT infrastructure. This poster meticulously examines the profound impact of cloud technologies on businesses, emphasizing aspects of efficiency, scalability, and cost-effectiveness. Uncover the core concepts, benefits, and challenges associated with the adoption of cloud computing, shedding light on its transformative potential. From optimizing resource utilization to enabling rapid innovation, cloud computing stands as a cornerstone in building a resilient and agile digital future. Join us in exploring the dynamic landscape of cloud solutions, where flexibility and accessibility converge to redefine the way organizations approach information technology.

Tech Education Advancement

Aviral Dubey, Abhijit Manoj, Chhatrapal Gaur
B.Tech (CSE – I)

Embark on a transformative journey into the future of education with Tech Education Advancement, a poster presentation that explores cutting-edge innovations and technologies reshaping the educational landscape. This abstract unveils the integration of virtual classrooms, personalized learning, and emerging technologies such as Augmented Reality, Virtual Reality, and Artificial Intelligence. Witness the revolution in teaching and learning, where the boundaries of traditional education are surpassed, and new possibilities are embraced. Real-world examples and success stories illustrate the impact of these advancements on student engagement, understanding, and institutional adaptability. Tech Education Advancement is your comprehensive guide to the forefront of educational innovation, showcasing how technology enhances accessibility, engagement, and effectiveness in the learning process. Join us in unlocking the potential of these advancements to create a future where education is not only dynamic and adaptable but also empowers learners for the challenges of the digital age.

Video Games

Mohammad Elaf Khan, Pavan Sondhiya
B.Tech (CSE – I)

Dive into the captivating realm of Video Games, where technology and creativity converge to redefine entertainment and interactive storytelling. This abstract invites you to explore the dynamic evolution of gaming technology, from early pixelated adventures to the immersive virtual realities of today. Delve into the profound impact of video games, transcending traditional boundaries to become powerful tools for education, simulation, and social interaction. Witness the intricate threads connecting technology and storytelling, as video games emerge as a unique medium for narrative expression. This presentation unravels the universal appeal of interactive digital experiences, showcasing how video games have transitioned from mere entertainment to influential cultural phenomena. From cutting-edge graphics to innovative game play mechanics, the poster highlights the continual innovation in the video game industry. Join us on a journey through the rich history and promising future of video games, where technology and creativity converge to shape an ever-expanding universe of digital adventures.

Blockchain and Cloud Computing

Insha Siddiqui
MCA (Cloud Computing – I)

Initiate on a journey into the synergistic realms of Blockchain and Cloud Computing through this insightful poster presentation. The abstract explores the integration possibilities, security implications, and collaborative potential arising from the convergence of these transformative technologies. Gain a comprehensive understanding of how the fusion of blockchain and cloud solutions is reshaping industries, ensuring transparency, and fostering decentralized digital ecosystems. Delve into real-world applications and case studies that illustrate the profound impact of this alliance. The abstract highlights the strategic integration of blockchain's decentralized ledger technology with the scalable and flexible infrastructure provided by cloud computing. Discover how this powerful synergy enhances data integrity, security, and efficiency across various sectors. Blockchain and Cloud Computing is not just a glimpse into the future; it is a roadmap for navigating the dynamic landscape where trust, innovation, and resilience intersect. Join us in unravelling the intricate dynamics of this technological alliance and exploring the limitless possibilities it offers for reshaping the way we manage, secure, and share information in the digital age.

Memory Management

Suryabhan Singh, Vikas Kumar, Shalini Kumara
B.Tech (CSE – III)

Embark on a nuanced exploration of Memory Management, a foundational pillar in computing systems. This abstract delves into the intricate strategies and techniques employed to optimize memory usage, ensuring the efficient allocation and deallocation of resources within the computing environment. Memory management plays a critical role in maintaining system performance, stability, and responsiveness. It involves a delicate balance between various processes and programs vying for limited resources. Challenges associated with memory fragmentation, leaks, and allocation errors are addressed, highlighting the ongoing efforts to enhance this vital component of computing. Join us as we navigate through the complexities of memory management, where the efficiency of resource utilization is paramount for creating robust, high-performing computing environments that meet the demands of contemporary applications and technologies.

Emerging Technologies Shaping the Future of Computing in India

Pranjal Soni, Milind Randive, Payal Suryavansi
B.Tech (Full Stack Development – I)

Embark on a survey of computing innovation in India with a focus on emerging technologies. This abstract provides a panoramic view of the technological landscape, highlighting the transformative potential of Artificial Intelligence, Blockchain, Quantum Computing, and other cutting-edge innovations. Discover how these emerging technologies are catalysing a paradigm shift in various sectors, positioning India at the forefront of global technological advancements. From startups to established industries, witness the impact of these technologies on shaping a progressive and technology-driven future for the nation.

Cloud Migration

Sarthak Vyas
MCA (Cloud Computing – I)

Embark on a transformative journey into the realm of cloud migration, where organizations transition from traditional on-premise infrastructure to dynamic cloud-based solutions. This abstract guides you through the key considerations, challenges, and benefits associated with cloud migration. Explore how this strategic shift empowers scalability, enhances flexibility, and optimizes cost-efficiency for businesses of all sizes. From data security to operational agility, delve into the multifaceted aspects of cloud migration and understand how this evolution is reshaping the digital landscape, offering new possibilities for innovation and growth.

5G Revolution

Shashwat Pratap Singh, Prakhar Kumar Kashyap
B.Tech (Artificial Intelligence – I)

Embark on an exploration of the revolutionary era ushered in by the 5G Revolution. This abstract unravels the transformative impact of fifth-generation technology on communication and computing. With unparalleled speeds and minimal latency, 5G is poised to redefine mobile communication, unlocking new possibilities for industries and individuals alike. From enhanced mobile broadband to the Internet of Things (IoT), witness how 5G is reshaping connectivity, offering seamless and instantaneous communication experiences. Navigate through the technological advancements driving the 5G revolution, gaining insights into how this transformative force is reshaping the way we connect, communicate, and experience the digital world. Join us on a journey through the dynamic landscape of 5G, where the convergence of technology and connectivity is paving the way for a new era of digital experiences and possibilities. As 5G unfolds, it presents not only faster connections but a paradigm shifts in the way we interact with and leverage the digital realm, positioning itself as a cornerstone in the next wave of technological evolution.

Information Technology – Cloud

Yash Vishwakarma
BCA (Cloud Computing – I)

Embark on a transformative journey into the realm of Information Technology (IT) with a focus on cloud computing. This abstract delves into the profound impact of cloud technology, a paradigm-shifting force revolutionizing the IT landscape. Cloud computing, with its scalable and on-demand resources, has become the cornerstone of innovation, reshaping the way organizations approach technology infrastructure. As a dynamic and flexible foundation, the cloud offers fundamental models such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). Discover the benefits of cloud adoption, ranging from enhanced cost efficiency and scalability to improved collaboration and accessibility. This exploration extends to the crucial considerations of security within cloud environments, emphasizing the need for robust practices to safeguard data and privacy. As organizations increasingly integrate cloud solutions, the abstract contemplates the future trajectory of cloud technology, envisioning its pivotal role in shaping the future of IT. Join this transformative journey where the cloud not only revolutionizes infrastructure but becomes an indispensable catalyst for innovation, efficiency, and resilience in the digital era.