SRM
INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University u/s 3 of UGC Act, 1956)

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COLOSSAL

VOLUME 2
ISSUE 4

CINTELASSOCIATION

DEPARTMENT OF CINTEL
Software that can think

THE DEPARTMENT OF COMPUTATIONAL INTELLIGENCE

School of Computing

NAAC A++

Category 1 with 12B Status

(2022) Ranked 19th University

(2023) World Ranking one among 41 Indian Universities

(2023) World Ranking one among 75 Indian Universities

(2021) Ranked 4th

(2023) World Ranking one among 14 Indian Universities

Editor's Voice

"One never notices what has been done; one can only see what remains to be done." – Marie Curie

Dear Lectors,

Warm Welcome to dive into our Next Edition of Colossal. Do you have any superior who thinks out of the Box? Do you have any subordinate who co-work day and night about the targets to be achieved tirelessly? Do you have any intellectual young minds fond of innovation and knowledge which helps for the society? Do you have any environment which contemplates all the three facts? Yes! We have it in our Premises, in our department, which is Computational Intelligence!

Just for a glimpse of the departments' achievements streams like a falls in the development of conducting many student events, club activities, PhD viva meetings, Expert talks, Alumni meets and talks, Technical seminars, workshops, FDPs, Patents, Product developments, Fund acquisition and what not.....

PwC's global AI study says that the global economy will see a boost of 14% in GDP by 2030, amounting to a potential increase of $15.7 trillion. This technology has reshaped the market, introduced Alexa, got Netflix to give you binge-worthy recommendations, eased the effort you put into communicating with a customer service agent – and recently, made headlines with ChatGPT. So, every invention is taking place due to the intelligence sit on top of the data to rule the data. Datafication is simply transforming everything in our life into devices or software powered by data.

Therefore, Datafication is the modification of human chores and tasks into data-driven technology. From our smartphones, industrial machines, and office applications to AI-powered appliances and everything else, data is here to stay for longer than we can ever remember! So, to keep our data stored the right way and secure and safe, it has become an in-demand specialization in our economy. For the same Computational intelligence becomes vital and we look into the tireless nature of scientists.

Indefatigable despite a career of physically demanding and ultimately fatal work, Marie Curie discovered polonium and radium, championed the use of radiation in medicine and fundamentally changed our understanding of radioactivity. As she did, why can't, we?

Meet you in the Next Edition! Hold your Horses!

B.AMUTHA

MRS.C.G.ANUPAMA

DR.D.ANITHA

MR.C.ARUN

CINTEL

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The Department of CINTEL is proud to showcase the projects given to them to prove its excelence

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INTERNATIONAL CONFERENCE

The Department of Computational Intelligence showcases one of the most coveted event hosted by us

HIGHILIGHTS

MEMORANDUM OF UNDERSTANDING

To Whom It May Concern,

We took another significant step towards making technology more accessible for the students, research scholars and faculties. SRM University is pleased to sign Memorandum of Understanding (MoU) with Intel® Unnati Program through Edulateral Foundation to enhance Employability, promote Entrepreneurship and drive Innovation.

This Collaboration aims to provide state of art facilities with an inspiring research setting, to improve opportunity for interdisciplinary working and research excellence there by solving real world problems, through network of collaboration. Through Intel® Unnati Labs of Excellence, Edulateral Foundation will train the faculties and students in emerging technologies - IOT, AI & HPC

Key features of the lab:

1. Opportunity to work in High Computational Lab.
2. Exposure to learn Artificial Intelligence - Machine Learning & Deep Learning.
3. Gateway for Training and Internship opportunities.

IconDeepCom-2023

The second edition of IconDeepCom-2023 (International Conference on Deep Sciences for Computing and Communications is an international conference in the field of Deep Learning Algorithms and sciences for computing and communication paradigms, focusing to address issues and developments in recent approaches, algorithms, mechanisms, and developments in a variety of engineering and science applications. Specifically, this 2nd edition is focus towards XAI and Digital Twin Technology. Conducted on, Thursday, 20 April, 2023 to Saturday, 22 April, 2023.

This conference seeks to bring together international researchers to present papers and generate discussions on the recent trends and developments of computing, communications, and science information systems. The conference will feature a range of presentations on the latest research activities as well as stimulating talks and keynote addresses. It is organized by the Department of Computational Intelligence, SRMIST, on 20-22, April 2023.

IconDeepCom-2023 Key Note Sessions

Our Speaker:
Dr. (Smt) Chandrika Kaushik
Director General (Production Coordination & Services Interaction), DRDO

Dr. Chandrika Kaushik discussed about the applications of Artificial Intelligence for projects that are ongoing for the Navel, military and air force. AI algorithms for path planning, Simultaneous localization and mapping (SLAM), Object detection and recognition, and task coordination for mobile platforms are highlighted. The opportunities that are available in terms of research positions and internship categories are discussed.

Our Speaker:
Prof. Mohammed S. Obaidat
Novel Biometric-based Cybersecurity Methodologies for Risk-based Authentication in Web Systems

Prof. Mohammed S. Obaidat emphasized the potential of behavioral biometrics for continuous authentication in web systems. By monitoring and analyzing user behavior, systems can detect deviations from established patterns, allowing real-time authentication and enhanced security.

Mouse stroke uniqueness, a unique profile created by users' movements, can be valuable for continuous authentication. However, challenges like privacy concerns, data security, and system scalability must be addressed. Robust encryption and privacy-preserving techniques are essential to protect biometric data and ensure compliance with data protection regulations.

"Digital Twin and the Future for Internet of Health Things"

Dr. Utku Kos of SDU, Turkey discussed the future benefits of integrating Digital Twin and IoT for ensuring device security without physical interaction. By connecting devices directly to Digital Twin platforms, businesses can create a digital model and reduce the risk of breaches. Digital Twin technology can help early adopters secure their devices, reducing the danger of hacks to company data.

IconDeepCom-2023 Key Note Sessions

"Artificial Intelligence in Health Care"

Prof. Nancy Jane of Anna University, Chennai has presented AI and ML Basics and research on novel AI based techniques in Healthcare domain with real time case studies. Ma'am has also highlighted the importance of AI in strengthening Healthcare Sector and mitigating risks associated with AI Based applications.

Tracks Highlights

The conference attracted a large number of entries, with 81 papers selected for presentation. During the event, 62 papers were given, with 32 in physical sessions and 30 in online sessions. The tracks covered a wide range of themes, and the best papers in each track were awarded.

The best paper prize in the "Computer Vision" track awarded to "A Transformer-based Medicine Recommendation System that Uses Drug Reviews" delivered by Madhav Mukund Verma and Dr. D. Anitha from SRMIST KTR's Computational Intelligence Department.

The best paper award was given for the track "Digital Twin and Immersive Technologies" to "A Scalable Distributed Computation Framework for Tackling Underutilization and Adhoc Computations in Heterogeneous Clusters," delivered by Vishant Nambiar and Dr. K. Suresh from CINTEL, SRMIST.

The best paper prize in the "AI for Healthcare" track went to "Pothole Detection from an Enhanced Aerial Image Using CNN Model," presented by Mrs. A. Jackulin Mahariba, Mrs. A.L. Amutha, Dr. T.R. Saravanan, and Mrs. Priya S from SRMIST's Department of Computational Intelligence and CTech.

Finally, the best paper prize was given in the "Interdisciplinary Research" track to outstanding research presentations from three physical and eight online papers. IconDeepCom-2023 was a huge success in terms of creating a collaborative and enjoyable atmosphere for academics, professionals, and students to study cutting-edge breakthroughs in deep sciences for computing and communications. The numerous tracks of the conference displayed breakthroughs in various disciplines and promoted cross-disciplinary talks, making it a genuinely memorable event for all participants.

FUNDED PROJECTS

- Dr. R. Annie Uthra, in collaboration with Dr. A. Jackulin Mahariba, secured a substantial grant of Rs. 44,98,551/- funded by the Ministry of Earth Sciences (MoES). Their project is entitled "Digital Twin assisted operational decision support system for deep-ocean manned scientific submersible."
- In another collaboration, this time with Dr. Saad Yunus Sait, Dr. R. Annie Uthra received additional funding of 30 lakhs from the Ministry of Earth Sciences (MoES). This funding is for their pilot study on demonstrating a deep learning-based non-invasive ultrasound tool for assessing the sexual maturation of the Asian sea bass Lates calcarifer.

- Furthermore, Dr. G. Sumathy, Dr. R. Udendharan, and Dr. A. Maheshwari received grant credits amounting to USD 14,000 for their research under MeitY QCAL. Their project, titled "An Efficient Quantum Blind Signature Technique for improving the security against Quantum Computer Attacks in the Indian Army," emphasizes enhancing cybersecurity measures.

CINTEL

FACULTY ACHIEVEMENT

Mrs. Anupama C.G, Assistant Professor, Department of Computational Intelligence, has been deputed as as **Assistant Director-International Relations**

Dr.A.L.Amutha Completed her Ph.D Degree from SRM Institute of Science and Technology, defended her Ph.D work titled "**Development of Improved Algorithms for Anomaly Detection and Classification of Streaming PMU Data in Smart Grid** " on 24th May 2023.

Dr.Jackuline Mahariba Completed her Ph.D Degree from SRM Institute of Science and Technology, defended her Ph.D work titled "**Machine learning and GIS based accident detection and prevention system for Powered Two-wheelers**" on 26th May 2023.

FACULTY ACHIEVEMENT

As faculty members, we were fortunate to have the opportunity to receive training in Design Thinking, which provided us with a fresh perspective on applying it not only in education but also in our daily lives. Personally, I found that this training enabled me to effectively express a unique and innovative approach in identifying problems with empathy, and subsequently seeking out solutions.

Collaboration and Interdisciplinary Approach: Through Design Thinking, we learned the value of collaboration and working with colleagues from diverse disciplines. This approach encouraged us to pool our knowledge and skills, resulting in more comprehensive and innovative solutions to complex problems.

Human-Centered Problem Solving: Design Thinking emphasized the importance of understanding the needs, experiences, and perspectives of the end-users or stakeholders. This human-centered approach helped us develop a deeper empathy and better address the real challenges faced by students, colleagues, and the broader community.

Iterative and Prototyping Process: Another significant aspect of Design Thinking was the iterative nature of the problem-solving process. We learned the value of rapid prototyping and testing ideas to gather feedback and refine our solutions. This iterative approach allowed us to quickly learn from failures and make improvements, leading to more effective outcomes.

Creative Problem Solving: Design Thinking encouraged us to think outside the box and challenge conventional assumptions. By adopting a more creative mindset, we were able to explore unconventional approaches and generate innovative ideas that had the potential to transform the educational experience and solve complex problems in new ways.

Empowerment and Ownership: The training in Design Thinking empowered us as faculty members to take ownership of the challenges we faced and provided us with practical tools and frameworks to navigate them effectively. We felt more confident in our abilities to initiate positive change and make a meaningful impact in both our teaching practices and our day-to-day lives.

Transferable Skills: One of the most valuable aspects of Design Thinking was the development of transferable skills. The techniques and mindset cultivated through this training extended beyond the realm of education and permeated into various aspects of our lives. We found ourselves applying the problem-solving principles of Design Thinking to personal challenges and even community initiatives.
Overall, the experience of undergoing Design Thinking training as faculty members broadened our perspectives, enhanced our problem-solving abilities, and equipped us with a valuable toolkit to approach both educational and everyday challenges with creativity, empathy, and effectiveness.

GOOGLE'S QUANTUM LEAP: PIONEERING THE NEXT COMPUTING FRONTIER

Google has been at the forefront of cutting-edge technologies, including quantum computing. In 2014, the company established the Google Quantum AI Lab, led by experts like John Martinis and Sergio Boixo, with a focus on developing quantum computers that surpass classical computing limits.

In 2019, Google achieved a milestone by introducing "Sycamore," a 53-qubit quantum processor that demonstrated "quantum supremacy." It outperformed the most powerful classical supercomputers in a specific computation, highlighting Google's leading role in the quantum computing revolution.

Google's quantum progress relies on designing superior superconducting qubits that operate at ultra-low temperatures near absolute zero. This low-temperature environment preserves the quantum properties of qubits, enabling scalable quantum computing systems.

To protect the delicate quantum states of these qubits, Google engineers have invested significant effort in quantum error correction techniques. These methods counteract environmental interference and noise that can lead to qubit decoherence. As a result, Google's quantum processors have improved stability and accuracy.

Google's quantum leap offers immense processing power that surpasses conventional computers. Quantum computers have the potential to revolutionize industries like cryptography, optimization, and material science.

Overall, Google's Quantum AI Lab, through groundbreaking achievements like "quantum supremacy" with Sycamore, has positioned the company as a leader in quantum computing and opened doors to transformative applications in various fields.

QUANTUM MACHINE LEARING

Quantum Machine Learning (QML) is a cutting-edge field that merges quantum computing with artificial intelligence, promising to transform data analysis and problem-solving. By harnessing the principles of quantum physics, QML enhances machine learning algorithms, enabling them to process vast amounts of data more efficiently and solve complex problems faster than traditional methods. The core features of quantum superposition and entanglement empower quantum computers to perform an exponential number of operations in parallel, leading to significant advancements in various disciplines.

Researchers have made remarkable progress in developing QML algorithms that leverage quantum advantages. Hybrid quantum-classical algorithms, such as Variational Quantum Eigensolver (VQE) and Quantum Support Vector Machine (QSVM), combine the strengths of classical and quantum computing to perform more effective optimization and classification tasks. Additionally, the concept of quantum neural networks, or quantum circuits, expands the scope of QML, enabling more efficient handling of high-dimensional data and complex patterns, ultimately leading to improved accuracy and performance.

The potential applications of Quantum Machine Learning span numerous sectors and scientific fields. In drug discovery, QML algorithms can accelerate the screening of molecular interactions and accurately predict potential drug candidates, saving time and resources in drug development. Financial institutions can benefit from QML for portfolio optimization and risk assessment, as quantum algorithms can analyze vast financial databases and optimize trading strategies, providing traders with a competitive advantage. Furthermore, QML can address challenges in image and speech recognition, natural language processing, and optimization, leading to more intelligent systems in robotics, autonomous vehicles, and smart cities.

However, Quantum Machine Learning faces significant challenges. Quantum computers are susceptible to noise and errors, which researchers actively investigate for error-correcting techniques to enhance stability and reliability. Additionally, scaling up quantum processors while preserving qubit integrity remains a major obstacle in realizing the full potential of QML. Despite these challenges, continued research and advancements in quantum computing hold the key to unlocking QML's revolutionary impact on various industries, data analysis, optimization, and pattern identification.

PLACEMENTS

April 2023 - July 2023

ShashankKaushik Sharma form CSE with specialization in Software Engineering got a stipend of 20,000 from PWC

SaiSwarup Yakkala from CSE with specilization in Artificial Intelligence cracked an internship at Vivriti internship

Vanshika Singh Gour and **SANSKRITI SINHA** CSE from CSE with specialization in Software Engineering received an internship from DELL with a stipend of 25,000 with a CTC of 12.0 to 13.0 LPA

ARUN JANGRA from CSE with specialization in Artificial Intelligence and Machine Learning obtained a Stipend of 20,000 per month with a CTC of 10.0LPA

Ayush Mishra from CSE and **Sitanshu Pokalwar** with specialization in Artificial Intelligence, and Machine Learning and Ananya Jha from CSE with specialization in Software Engineering landed a internship with Maximal Labs with a Stipend of 25000 per month with a CTC of 10.0- 12.0 LPA.

Our Recruiters

PLACEMENTS

April 2023 - July 2023

Internship with PWC- Stipend 20,000 pm

Shashank Kaushik Sharma

Internship with Vivriti- Stipend 20,000 pm

SaiSwarup Yakkala

Internship with Dell- Stipend 25,000 pm

Vanshika Singh Gour

Sanskriti Sinha

Internship with Nokia- Stipend 25,000 pm

Suhani jain

Internship with HashStack - Stipend 40,000 pm

Arun Jangra

Ayush Mishra

Internship with Maximal Labs- Stipend 25,000 pm

Ananya Jha

Sitanshu Pokalwar

Internship with AMT - Stipend 20,000 pm

Ronit Kumar

Internship with Bajaj FinServ- Stipend 35,000 pm

Aditya Mishra

Brijesh Kumar

Gautam J

Devansh Bhardwaj

PLACEMENTS

April 2023 - July 2023

Internship with PandaCorp- Stipend 20,000 pm

Akshat C Sheety

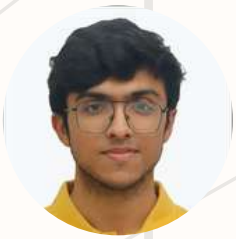
Internship with XPeri- Stipend 20,000 pm

Aditya Paul

Paturi Sai Rohit

Internship with Amadeus Lab- CTC 11.77 LPA

Sarapu Sethu Madhava



Karthik Deepu Panicker

Internship with ABINBEVs- Stipend 30,000 pm

Angad Singh Malhan

Atulya Deep

Swapnil Sinha

Anup Suryakant Kewat

Jasmann Singh Singh Saini

Internship with ABINBEVs- Stipend 30,000 pm

Kunjal Lal

Sarathchandra Matavalam

Internship with Kuddle Kuddle - Stipend 40,000 pm

Vashist Agarwalla

DEMYSTIFYING QUANTUM ALGORITHMS: A LOOK AT THE NEXT DECADE

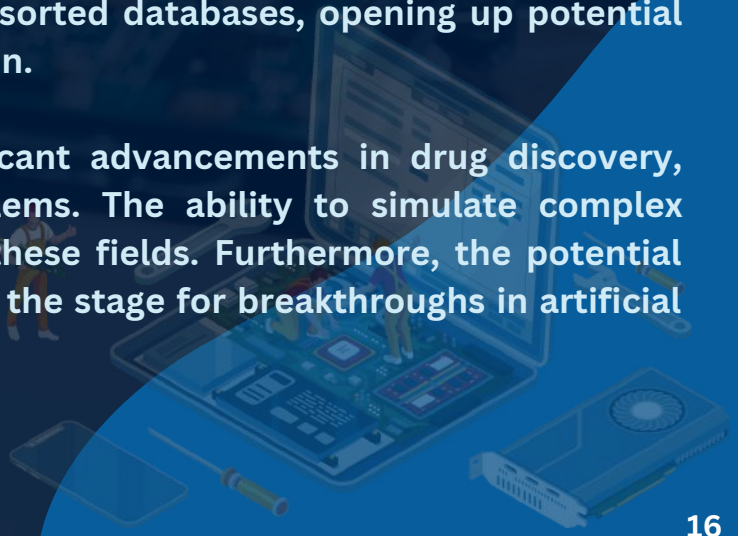
Welcome to the thrilling frontier of quantum computing, a realm where the principles of quantum mechanics breathe life into a revolution in data processing. As we move beyond traditional computing, where bits encode information as 0s and 1s, we step into a universe where quantum bits, or qubits, can exist in multiple states simultaneously.

The strength of quantum computing lies in the properties of superposition and entanglement. Unlike classical bits limited to representing 0 or 1, qubits can exhibit both states simultaneously due to superposition. This property allows quantum computers to perform complex calculations concurrently, leading to potential exponential speedups for certain tasks. The property of entanglement allows qubits to maintain a deep connection despite significant distances. A measurement on one entangled qubit immediately impacts the state of its entangled partner, no matter their physical separation. This intriguing phenomenon could have significant implications for secure communication and quantum teleportation.

The development of quantum computers has been marked by notable strides in academia and the tech industry alike. Tech giants like IBM, Google, and Microsoft, along with rising stars like Rigetti Computing and IonQ, are at the forefront of this quantum race. The primary challenge, however, lies in overcoming qubits' sensitivity to decoherence and environmental noise, with researchers focusing on quantum error correction techniques like surface codes and topological qubits.

Certain quantum algorithms promise remarkable improvements over classical counterparts. Shor's algorithm, capable of efficiently factoring large numbers, could pose a threat to conventional encryption systems like RSA. Grover's algorithm, on the other hand, enhances the search of unsorted databases, opening up potential applications in data analysis and optimization.

Quantum computing also promises significant advancements in drug discovery, materials science, and optimization problems. The ability to simulate complex quantum interactions could revolutionize these fields. Furthermore, the potential impact on machine learning tasks could set the stage for breakthroughs in artificial intelligence.



Quantum Cryptography

In an era of increased digitalization and cyber dangers, safe communication has become a top priority. Quantum cryptography, a cutting-edge technique based on quantum mechanics principles, provides a novel answer to this challenge.

Quantum cryptography uses quantum phenomena, such as photons, to secure communication between two parties. Photons, conveyed as qubits (quantum bits), can exist in numerous states simultaneously, making it hard for an eavesdropper to intercept them without disrupting the original signal. The "observer effect" ensures any eavesdropping attempts are detectable, ensuring privacy.

Quantum Key Distribution (QKD) is a well-known application, where a sender (Alice) sends quantum-encrypted qubits to a receiver (Bob) to create a shared secret cryptographic key. Interception by an eavesdropper (Eve) would render the communication unsafe.

Quantum cryptography supplements traditional cryptography. Post-Quantum Cryptography designs methods secure against quantum computer attacks. Researchers are exploring lattice-based and code-based cryptography.

Quantum cryptography has implications for secure communication in various industries, benefiting governments, military, financial institutions, and healthcare providers. It protects against cyberattacks and data breaches.

Despite its unrivaled security, quantum cryptography faces obstacles such as qubit control, noise, and decoherence. Researchers are developing robust qubit technologies like solid-state qubits and trapped ions.

Building quantum communication networks poses engineering and logistical challenges for long-distance quantum links.
As quantum computing advances, the need for quantum-secure cryptography becomes more pressing.

Research holds the possibility of overcoming these obstacles and ushering in a new era of secure communication, protecting our digital world and ensuring a safer future.

Student Achievemnt

CINTEl

Kanupriya Johari (RA2111026010373) student from III yr AIML received IIT Roorkee Spark Fellowship - Rs 2500/- per week - ICED scholar.

Kanupriya Johari (RA2111026010373 from III yr AIML received Google E scholarship - Rs. 1,00,000/- 2-year program to develop technical and corporate skills by Google in collaboration with Talents".

Srikar Srinivasan (RA2211026010509) student from IIyr AIML along with his team won the Cricket tournament held at RMK 24th April to 28th April 2023.

Ranga Ananta Vatsalya Rama (RA2211026010478) student from IIyr AIML and others as a team WON the FUTURE AWARD and Rs.10,000 cash in Electric Solar Vehicle Championship- 3000 competition held at Galgotias University, Noida from 11.04.2023 to 24.04.2023.

Mr. Ajay Krishna (RA2011026010157) and **Ms. Avanktika Suresh** (RA2011026010160) of IV Year AIML Q2 Section got the opportunity to work as an intern at Indian Space Research Organization (ISRO).

Kush Bhargav Sah (RA2011033010167) student from IV yr SWE won the first prize of $2500 in D-Comm VALHALLA - Code for a Better Future (Online International Hackathon) from December 15 to May 2, 2023.

Anish Parkhi (RA2111033010102) student from IV yr SWE won Quiz India hackathon by Ministry of Electronics and Information Technology held at Electronics Niketan, New Delhi and also he is currently developing the quiz India portal with features like AI generated quiz creation, quiz analysis, 3D models in questions, smart questions suggestions with the initial fund amount of Rs.50,000/-

CINTEL

FACULTY UPSKILLING

Empowering educators through targeted training for enhanced teaching proficiency.

1. Dr.J.Jeyasudha, Dr.J.V.Vidya, Dr.Aruna Rani, Dr.A.Maheswari, Dr.G.Sumathy, Dr.Reshmy, Dr.A.Sheryl Oliver and Dr. Saad Yunus Sait completed faculty upskill course titled Compiler Design offered by CSEDU-IIT.
2. Dr.M.Vimaladevi completed her Certified System Administrator(CSA) in ServiceNow.
3. Dr.E.Poongothai completed the course "Machine Learning Using Matlab" from the Mathworks Training Services.
4. Dr.K.Suresh completed the NPTEL course "Deep Learning" with Elite Certificate and also completed the NPTEL course "Introduction to Intellectual Property to Engineers and Technogists".
5. Dr.R.Babu completed the 12 Weeks NPTEL course "Introduction to Database Systems" under Elite Category.
6. Dr.M. Karpagam completed PG Program in Data Science and Business Analytics from University of Texas, Austin.
7. Dr.A. Maheshwari, Dr.B.Pitchai Manickam completed the NPTEL course "Compiler Design" with Elite Certificate.
8. Dr.G. Sumathy completed the NPTEL course "Affective Computing".
9. Dr.N. Kanimozhi completed the NPTEL course "The Joy of Computing using Python" with Elite Certificate.
10. Dr.Gopirajan PV completed the NPTEL course "Introduction to Intellectual Property to Engineers and Technogists".

PATENTS & CONSULTANCY PROJECTS

Grant

1. **Dr.T.R.Saravanan, Dr.N.Kanimozhi** received patent grant for the title, "Temperature based touch less attendance system", from Government of India ,April 2023.
2. **Dr.Kaavya Kanagaraj, Dr.Sheryl Oliver** received patent grant for the title, "Design patent Granted on biometric authentication device", from IPR,India

Published

1. **Dr.T.Subha** published a patent titled ,"A SYSTEM AND APPARATUS FOR HAND HYGIENE COMPLIANCE AND INPATIENT SECURITY IN HOSPITALS USING IOT",IPR,India.
2. **Dr.A L Amutha** published a patent titled," A system and apparatus for hand hygiene compliance and inpatient security in hospital using IOT", IPR, India.
3. **Dr.G.Sivashankar** published a patent titled,"Smart and Automated Insecticide and Fertilizer Recommendation System to support Smart Farming Techniques using Deep Learning", IPR, India.
4. **Dr.K.Moorthi** published a patent titled, "Human Resource Based Approach for Electronic Commerce", IPR, India.
5. **Dr.K. Babu** published a patent titled," Design System of Deep Learning Based Leaf Disease Detection in Crops", IPR , India.

Filed

1. **Dr.M. Karpagam, Dr.A. Maheshwari, Dr.K.Vijayalakshmi, Dr.G. Sumathy** filed a patent titled, "Digi-Doc(Digital Doctor)-Voice over Phonetic Medical Prescriptions for Diagnosing Diseases using Random Forest Classifier", IPR, India.
2. **Dr.S. Prithi, Dr.A.K. Reshmy, Dr. R.Udendhran, Dr.R.A. Karthika, Dr.Sudha Rajesh** filed a patent titled, "MANUAL RETRACTABLE CLOTH DRYER FOR MULTISTORIED RESIDENTIAL BUILDINGS", IPR, India.

DISCOVER THE MAGIC OF MUNNAR

FFrom the 23rd to the 28th of April 2023, the Cintel Department organized an industrial visit, taking 208 students and 7 staff members to Munnar and Cochin. They left Chennai Central Railway station at 2:30 p.m. and arrived at Ernakulam station at 2:30 a.m. the next day. They went to Munnar via bus and checked into a hotel in Ernakulam for breakfast and relaxation. After touring tea plantations, they returned to the hotel. The next day, they visited Wonderla, an amusement park, enjoying rides and recreational activities. On the third day, they visited Chips Software Systems Pvt. Ltd. and Spectrum Technologies, learning about software publication, consulting, AI, ML, healthcare, and automobiles. On the fourth day, they visited Alappuzha Boat House for a relaxing trip around Kerala's backwaters. On the fifth day, they returned to Chennai with valuable experiences and knowledge, appreciating the learning opportunity. The industrial visit left an unforgettable impact on the participants' minds, fostering a desire for ongoing learning and discovery.

PUBLICATIONS

- **Dr.T.S. Shiny Angel** et al published a paper titled, “A Behavior-Based Interruption Detection Framework for Secure Internet of Things-Based Smart Industry Job Transactions” Soft Computing, Springer-27, pages11801–11813 (2023), https://doi.org/10.1007/s00500-023-08767-9, Impact factor: 4.1 [SCI] .
- **Dr.T.S.Shiny Angel** et al published a paper titled, “An enhanced method of feature fusion techniques to diagnosis neonatal hyperbilirubinemia.” Soft Computing.27:10961–10974(2023). https://doi.org/10.1007/s00500-023-08565-3. Impact Factor : 3.732 [SCI].

- **Dr.A.Alice Nithya** et al published a paper title, “Comprehensive survey of human-activity detection and recognition with time-series model, AIP Conference Proceedings, 2023, 2581,050012.
- **Dr.A.Alice Nithya** et al published a paper titled, ”A review on educational engagement recognition model based on multimodal features in online learning”, AIP Conference Proceedings, 2023, 2581, 060002.
- **Dr.A.Alice Nithya** et al published a paper titled, “Recognizing active learners in online instruction using face recognition and sentimental analysis”, AIP Conference Proceedings,2023, 2581, 060003.

- **Dr.B.Hariharan** et al published a paper titled ,”A Replica-aware optimal path Based Data Transfer Scheduling on Cloud Using Adaptive Sunflower Optimization Algorithm,.2023 Eighth International Conference on Science Technology Engineering and Mathematics (ICONSTEM),June,2023.

- **Dr.S.Amudha, Dr.T.R.Saravanan, Sasi Rekha sankar, Dr.E.Poongothai** published IGI Global Book Chapter titled on, "Design and Development of Robots for Medical Assistance: An Architectural Approach" ,July 2023.

- **A. L.Amutha, R.Annie Uthra** et al published a paper titled, ”Anomaly Detection and Classification in streaming PMU data in smart grids”, Computer Systems Science and Engineering, 2023, 46(3), pp-3387-3401.

- **Dr.B.Jothi** published a paper titled, “Assessment of primary behavioural aspects towards early detection of cervical cancer assisted by neural networks”, AIP Conference Proceedings,2023, 2603, 020006.

- **Dr.B.Jothi, Dr.J.Jeyasudha** published book chapter titled,” Additive manufacturing using robotic programming”, in AI-Enabled Social Robotics in Human Care Services, 2023, pp. 259–282.

PUBLICATIONS

- **Joseph James** published a paper titled, “A Novel Framework for Semi-Supervised MultipleLabel Image Classification using Multi-stage CNN and Visual Attention Mechanism”,IJACSA, 10.14569/IJACSA.2023.0140454.

- **Dr.A.Saranya** published a paper titled, ”Cognitive Human Gait Analysis for Neuro-Physically Challenged Patients by Bat Optimization Algorithm”, International Journal of Reliable and Quality E-Healthcare,IGI Global, DOI: 10.4018/IJRQEH.313915.

- **Vimaladevi Madhivanan** et al published a paper titled, “An Evaluation on the Performance of Privacy Preserving Split Neural Networks”, First International Conference on Deep Sciences for Computing and Communication (ICONDEEPCOM-2022), March 2023, Scopus, Springer CCIS Proceedings.

- **Dr.A.Revathi** published a paper titled ,”Fuzzy Rule-Based Model to Train Videos in Video Surveillance System” published in Intelligent Automation & Soft Computing.

- **Dr.Sridevi Ponmalar** published a paper titled, ”Permutation feature importance-based fusion techniques for diabetes prediction,Soft Computing https://doi.org/10.1007/s00500-02308041-y.

- **Dr.R.Beaulah Jeyavathana** published a paper titled, ”Recognition of Emotions in speech using DeepCNN and RESNET”, Soft computing.

- **Dr.R.Athilakshmi** published a paper titled, ”Automatic Detection of Biomarker Genes through Deep Learning Techniques: A Research Perspective, Studies in Informatics and Control, ISSN 1220-1766, vol. 32(2), pp. 51-61, 2023. https://doi.org/10.24846/v32i2y202305(SCI-Q2).
- **Dr. R.Athilakshmi** published a paper titled, ”Personality Prediction Using Deep Learning,"2023 Third International Conference on Advances in Electrical, Computing, Communication and Sustainable Technologies (ICAECT), Bhilai, India, 2023, pp. 1-5, doi: 10.1109/ICAECT57570.2023.10117573.
- **Dr. R.Athilakshmi** published a paper titled, ”Geometric SMOTE-Based Approach to Improve the Prediction of Alzheimer's and Parkinson's Diseases for Highly Class-Imbalanced Data”, AI, IoT, and Blockchain Breakthroughs in E-Governance, edited by Kavita Saini, et al., IGI Global, 2023, pp. 114-137. https://doi.org/10.4018/978-1-6684-7697-0.ch008.

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- **Dr. S. Nagendra Prabhu** published a paper titled, ”Deep Learning Techniques: A Research Perspective”.

- **Dr.N.Meenakshi** published a paper titled, ”Design systematic wireless inventory trackers with prolonged lifetime and low energy consumption in future 6G network”, https://doi.org/10.1007/s11276-023-03325-5(0123456789).
- **Dr.N.Meenakshi** published a paper titled, ”An Efficient Deep Learning Based Hyperbolic Back Propagate Boltzmann Neural Network for Automated Vehicular Surveillance”.

- **Dr.K.Suresh** published a paper titled, ”DeepQ Residue Representation of Moving Object Images using YOLO in Video Surveillance Environment”.

- **Dr.S.Velliangiri** et al published a paper titled, ”Multi-disease classification model using deepneural network and Strassen's rectilinear fine-tune bouncing training algorithm. Expert Systems, e13335. https://doi.org/10.1111/exsy.13335.
- **Dr.S.Velliangiri** et al published a paper titled,” Intelligence Amplification-Based Smart Health Record Chain for Enterprise Management System”, Information. 2023; 14(5):284. https://doi.org/10.3390/info14050284R.
- **Dr.S.Velliangiri** et al published a paper titled,” Lung cancer disease prediction with CT scan and histopathological images feature analysis using deep learning techniques”,Results in Engineering, Volume 18, 2023, 101111, https://doi.org/10.1016/j.rineng.2023.101111.
- **Dr.S.Velliangiri** et al published a paper titled,” "Iotsdl: Internet Of Things Security For Deep Learning Techniques-A Research Perspectives,” 2023 International Conference on Computer Communication and Informatics (ICCCI), Coimbatore, India, 2023, pp. 1-7, doi: 10.1109/ICCCI56745.2023.10128558.
- **Dr.S.Velliangiri** et al published a paper titled, ”Reliable and Efficient Lane Changing Behaviour for Connected Autonomous Vehicle through Deep Reinforcement Learning, Procedia Computer Science, Volume 218, 2023, Pages 1112-1121, https://doi.org/10.1016/j.procs.2023.01.090.
- **Dr.S.Velliangiri** et al published a paper titled, “Security Analyses of Random Number Generation with Image Encryption Using Improved Chaotic Map”, Procedia Computer Science, Volume 215, 2022, Pages 432-441, https://doi.org/10.1016/j.procs.2022.12.045.
- **Dr.S.Velliangiri** et al published a paper titled, “Blockchain in Food Supply Chain”, Procedia Computer Science, Volume 215, 2022, Pages 321-330, https://doi.org/10.1016/j.procs.2022.12.034.

PUBLICATIONS

- **Dr.S.Velliangiri** et al published a paper titled, "An Enhanced CNN Model for Motor Imagery-Based Brain Computer Interface," 2023 International Conference on Computational Intelligence and Knowledge Economy (ICCIKE), Dubai, United Arab Emirates, 2023, pp. 263-268, doi: 10.1109/ICCIKE58312.2023.10131827.
- **Dr.S.Velliangiri** et al published a paper titled, "Machine Learning based Intelligent Diagnosis of Orthodontics: a comprehensive review," 2023 International Conference on Computational Intelligence and Knowledge Economy (ICCIKE), Dubai, United Arab Emirates, 2023, pp. 257-262, doi: 10.1109/ICCIKE58312.2023.10131704.
- **Dr.S.Velliangiri** et al published a paper titled, ”Machine Learning and Trust Based AODV Routing Protocol to Mitigate Flooding and Blackhole Attacks in MANET, Procedia Computer Science, Volume 218, 2023, Pages 2309-2318, https://doi.org/10.1016/j.procs.2023.01.206.

- **Dr. J.J. Jayakanth** published a paper titled,” Jamming Attacks Detection Approach Based on CNN based Quantum Leap Method for Wireless Sensor Network. International Journal on Recent and Innovation Trends in Computing and Communication, 11(4s), 242–249. https://doi.org/10.17762/ijritcc.v11i4s.6534.

- **Dr.R. Babu** published a paper titled,” Methodical Tamil Character Recognition Using Fabricated CNN Model”, in IEEExplore, 2023 International Conference on Computer Communication and Informatics, ICCCI 2023.
- **Dr.R.Babu** published a paper titled, ”Deep Dive on Oversampling and Under Samplin Techniques in Machine Learning”, Proceedings of the 1st International Conference on Recent Trends in Information Technology and its Application (ICRTITA).
- **Dr.R.Babu** published a paper titled, “Water Quality Monitoring and Notification System Based on Arduino, MATLAB and Visualization Techniques”, Proceedings of the 1st International Conference on Recent Trends in Information Technology and its Application (ICRTITA).

- **Dr.S.Priti** published a paper titled,” Methodical Tamil Character Recognition Using Fabricated CNN Model”, in IEEExplore, 2023 International Conference on Computer Communication and Informatics, ICCCI 2023.
- **Dr.S.Priti** published a paper titled, ”Prediction of Rental Demands using different Machine Learning Algorithms”, in IEEE explore, 2023 International Conference on Computer Communication and Informatics, ICCCI 2023.

PUBLICATIONS

- **Dr.G.Sumathy** published a paper titled, "Investigation of the Wear Behaviour of AA6063/Zirconium Oxide Nanocomposites Using Hybrid Machine Learning Algorithms," Journal of Chemistry, vol. 2023, Article ID 7571588, 16 pages, May 2023.

- **Dr.U.Sakthi** published a paper titled," Power grid based renewable energy analysis by photovoltaic cell machine learning architecture in wind energy hybridization", Volume 57, (2023) Sustainable Energy Technologies and Assessments.

- **Dr.C.Sherin Shibi** published a paper titled, "Measuring Surface Characteristics in Sustainable Machining of Titanium Alloys Using Deep Learning-Based Image Processing," in IEEE Sensors Journal, vol. 23, no. 12, pp. 13629-13639, 15 June15, 2023, doi: 10.1109/JSEN.2023.3269529. Impact Factor: 4.325. (SCI Indexed).

- **Dr.K. Babu** published a paper titled," Intelligent Energy Management System for Smart Grids Using Machine Bayesian Network-based Active Learning for Ontology-based Video Retrieval using Hidden Markov Logic Model with Edge Histogram Descriptor Type 2 diabetes mellitus classification using predictive supervised learning model".

- **Dr.SherylOliver** published a paper titled, "Permutation feature importance-based fusion techniques for diabetes prediction" ,Soft Computing, https://doi.org/10.1007/s00500-023-08041-y.

- **Dr. S. Abijah Roseline** published a paper titled," Radial basis function networks-based resource-aware offloading video analytics in mobile edge computing". Wireless Networks, pp.1-19 (2023). https://doi.org/10.1007/s11276-023-03420-7.\

- **Dr.S.P. Angelin Claret** published a paper titled," ,"Design and development of big data-based model for detecting fraud in healthcare insurance industry", Soft Computing,27, 8357–8369 (2023). https://doi.org/10.1007/s00500-023-08296-5.

SCO - FIT FACULTY SPORTS

Department Of Computational Intelligence excelled in the SRM Faculty Fit-2023 Sports Championships, taking first place in several events.

CINTEL sportsmen earned important positions in sports such as Men's Shuttle, Men's Volleyball, Chess Men's, and Carrom Men's in the Men's category. CINTEL athletes also excelled in field sports, winning medals in the Discus Throw, Javelin Throw, Long Jump, and Shot-put Throw. Furthermore, CINTEL's cricket squad and relay team performed admirably, contributing to the organization's overall achievement.

In the Women's category, CINTEL's female athletes excelled in sports such as Women's Shuttle, Chess Women's, and Carrom Women's, taking first and second place in each event. Furthermore, CINTEL's female athletes excelled in field sports, winning medals in the Discus Throw, Javelin Throw, Shot-put Throw, and the 4x100m Relay.

The accomplishments of CINTEL in the SRM Faculty Fit-2023 Sports Championships demonstrate their commitment to physical fitness, teamwork, and overall excellence. Their outstanding success inspires the entire SRM Institute of Science and Technology community, demonstrating the principles of hard work, determination, and sportsmanship. Congratulations to CINTEL on their stunning triumph and their significant effect on SRM's sporting heritage.

Alumni Talk

Reunion - Alumni Meet:

The Reunion - Alumni Meet was a joyous occasion that welcomed the graduates of the batch 2019-2023 back to their alma mater. Held in offline mode, the event witnessed a total of 83 participants, including senior faculty members and alumni students.
Dr. S. Krishnaveni, an Associate Professor, extended a warm welcome to all attendees, setting the tone for an engaging evening.

The event's prestigious guest, Dr. R. Annie Uthra, Head and Professor of the Department of Computational Intelligence, delivered a heartwarming presidential address. As the alumni reminisced about their college days, they were keen to share their experiences and insights with the current batch of students. Discussions ranged from code practicing to valuable placement tips, as well as strategies for excelling in hackathons and securing internship offers.

Alumni Talk on Career Guidance:

In a separate event that embraced the online mode, the Department of Computational Intelligence hosted an "Alumni Talk on Career Guidance" on 25th April 2023. The talk featured a distinguished alumnus, Mr. Harpreet Vishnoi, who graduated with a B.Tech in Computational Intelligence in 2017 and currently serves as the Product Manager at Jupiter Money.

During the talk, Mr. Vishnoi shared valuable insights on how to find jobs through internships, emphasizing their pivotal role in career growth. He encouraged students to seek practical exposure through internships, which enable them to apply their theoretical knowledge to real-world scenarios. Additionally, Mr. Vishnoi provided guidance on interview skills, resume building, and communication, crucial elements for successful job placements,which shed light on coding development platforms and the importance of participating in hackathons to enhance technical expertise.
The audience, comprising undergraduate and postgraduate students, found the session informative and inspiring. Feedback from the students highlighted the talk's significant impact on their understanding of future career prospects.

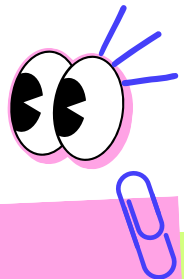
Word Search

Are always in fashion

N T A T I K S J O T D Q M J D
W O T N N O O L Q K E U S P A
H K I B N A S V I C S A I L N
H Y A T I E F A N O Y N L X A
H F G K I J A E G J Y T E X R
S R P O C S R L G Y K U L L O
M F E Y L E O N I U Q M L I G
Q Y T J H O V P O N O B A E G
I I L O S N P I R J G I R A A
K M C Q I B J O E E T T A S T
Z E M S X A E L T Z P B P X P
D Z A P F O I E C B K U X L S
C W U X G G R L L E J S S X Y
T S H O R S A L G O R I T H M
G N I T U P M O C D I R B Y H

ANSWERS

1.ANNEALING
2.AUTOMATA ZOO
3.COMPILER
4.CRYPTOGRAPHY
5.DECOHERENCE
6.HYBRID COMPUTING
7.NISQ DEVICES
8.PARALLELISM
9.QUANTUM BIT
10.SHOR'S ALGORITHM
11.SUPERPOSITION
12.TOPOLOGY



SCAN FOR A BATTLE

Department of Computational Intelligence

LETTER OF APPRECIATION

Dear Students & Faculty,

As this academic year concludes, I, the Head of the Department of Computational Intelligence, extend my sincere appreciation for your notable contributions to our newsletter. Your creativity and innovative ideas have reinforced our department's sense of community while expanding knowledge and fostering curiosity.

I commend our editors for their precision and commitment to excellence, raising the bar for our newsletter's standard. Likewise, I express my profound thanks to the faculty team for their consistent guidance and support in actualizing this endeavor. Your dedication has truly inspired us all.

As we bid farewell to this academic year, let's celebrate our shared achievements. Your efforts have made this year memorable and enriching. Let's move into the next academic year with this spirit of curiosity and collaboration, aiming to make more meaningful contributions to the field of computational intelligence.

Once more, my gratitude for your exceptional contributions. I look forward to a prosperous new academic year with all of you.

Best Regards,

Dr.R. Annie Uthra
Head of Department, CINTEL

MEET THE TEAM OF COLOSSAL

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எதிரதாக் காக்கும் அறிவினார்க் கில்லை
அதிர வருவதோர் நோய்.

The wise with watchful soul who coming ills foresee;
From coming evil's dreaded shock are free.

பின்னர் வரப்போவதை முன்னதாகவே அறிந்து காக்கும் அறிவுடையவர்க்கு, அவர் நடுங்கும்படியாக வருவதான ஒரு துன்பமும் இல்லை.

No terrifying calamity will happen to the wise, who (foresee) and guard against coming evils.