Proceedings and Schedule of

9th International Conference on Recent Trends in Computer Science and Engineering (RTCSE) (Online and In-Person Conference)

25 - 26 June 2026

Faculty of Information Technology, YARSI University, Jakarta, Indonesia

Proceeding Editors:

Ummi Azizah Rachmawati, Bishwajeet Pandey

Chair Message

On behalf of the organizing committee, it is our distinct honor and privilege to warmly welcome you to the 9th International Conference on Recent Trends in Computer Science and Electronics (RTCSE®-2025). This prestigious event will take place in Hybrid Mode on June 25–26, 2025, hosted by the Faculty of Information Technology, Yarsi University, Jakarta, Indonesia. Participants are invited to join us either in person in Jakarta or virtually from anywhere in the world. RTCSE®-2025 is devoted to promoting cutting-edge research and technological advancements in computer science, electronics, and allied fields. This year, we are proud to have received an outstanding number of high-quality submissions, reflecting the vibrant and dynamic nature of innovation in these domains. All accepted papers will be submitted to ESCI/Scopus Index Journal. As conference chair, I am excited to welcome a global community of researchers, professionals, and innovators to engage in fruitful discussions and explore the latest trends, challenges, and solutions in computer science and electronics. We are dedicated to making your experience in Jakarta both intellectually stimulating and personally rewarding. Our designed program—including keynote talks, technical sessions, and networking opportunities—promises to deliver valuable insights and foster lasting collaborations. Notably, RTCSE®-2025 represents the 34th conference organized by Gyancity Research Consultancy, in partnership with distinguished universities across the globe. We are sincerely grateful for the continued support and enthusiasm of our participants and look forward to hosting a successful and memorable event. Next conferences in 2025-2026 are following:

5th IEEE International Conference on AI in Cybersecurity (ICAIC)
18-20 February 2026 University of Houston, 4800 Calhoun Rd, Houston, TX 77004
https://icaic.gyancity.com/
11th International Conference on Green Computing and Engineering Technologies (ICGCET ®)
March 2026, Sydney, Australia
https://icgcet.org/

Best wishes.
Prof Ummi Azizah Rachmawati, Dean of Faculty of Information Technology, Universitas YARSI, Jakarta, Indonesia.
Prof Bishwajeet Pandey, GL Bajaj College of Technology and Management, India

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RTCSE-2025 AGENDA

Date: 25 June 2025 Location: Faculty of Information Technology, YARSI University, Jakarta, Indonesia	
Time	**Event**
9 am to 9:30 am	Breakfast
9:30 am to 11 am	Conference inauguration and keynote speech by 1. Mr. Bhushan Chavan, MRI, USA 2. Mr. Rakesh Pai, eviCore Healthcare (Cigna Healthcare Group), USA 3. Dr. Manmohan Shukla, Group Director, Pranveer Singh Institute of Technology, Kanpur, India
11am to 11:15am	**Break**
11:15am to 12:30pm	Paper presentations – Track 1
12:30pm to 2pm	**Lunch**
2pm to 3:30pm	Paper presentations – Track 2
3:30pm to 4:00pm	Keynote Speech by Dr Bishwajeet Pandey, GL Bajaj College of Technology and Management, Greater Noida, India

Track 1 Chair: Dr Arthur James Swart, Central University of Technology, South Africa and Dr Bishwajeet Kumar Pandey, GLBCTM, India
Paper Id: 1, 30, 37, 48, 52, 53, 63, 64, 65, 66
Track 2 Chair: Dr Ummi Azizah Rachmawati, YARSI University, Indonesia and Dr Man Mohan Shukla, PSIT, India
Paper Id: 31,35,45, 60, 67, 94, 107, 159

26 June 2025

Visit to Technical University of Bandung and Kawah Putih

Date: 26 June 2025	
Location: Technical University of Bandung, Bandung, Indonesia	
Time	**Event**
9 am to 9:30 am	Breakfast
9:30 am to 11 am	Plenary Talk by • Dr. Arthur James Swart, CUT, South Africa • Dr. Bishwajeet Pandey, GLBCTM India On Topic: Shaping the Future Education: The Synergy of AI and Cybersecurity for Safe and Innovative Learning
Afternoon visit	Kawah Putih

ICGCET'2015: 1ˢᵗ International Conference of Gyancity at Dubai, UAE

RTCSE'16: 2nd International Conference of Gyancity at Kuala Lumpur, Malaysia

RTCSE'16: 2nd International Conference of Gyancity at Kuala Lumpur, Malaysia
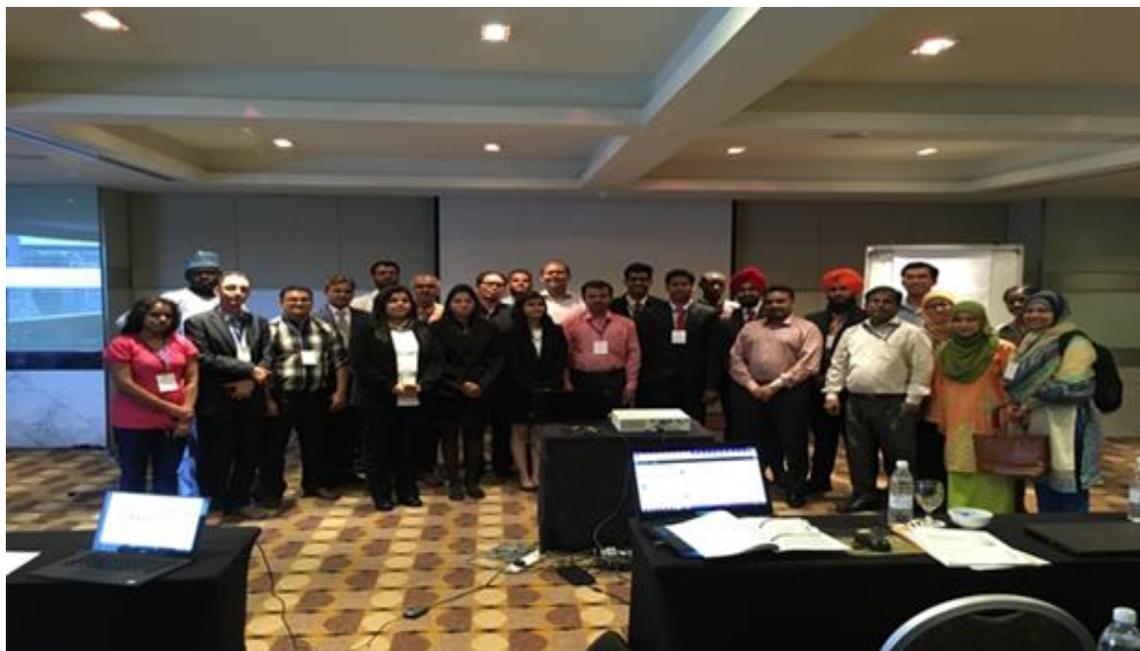
ICGCET'2016: 3rd International Conference of Gyancity at Aalborg University, Esbjerg, Denmark

Institut i Esbjerg samler forskere fra hele verden

DEL f 🐦 Af Edmund Jacobsen 15. august 2016 kl. 05:31

40 forskere og studerende fra hele verden samles på Institut for Energiteknik, Aalborg Universitet Esbjerg, i tre dage i denne uge, når der afvikles en international konference, der handler om at gøre computerteknologi mere grøn.

D.M. Akbar Hussain, lektor ved Institut for Energiteknik på Aalborg Universitet Esbjerg, har sammen med en kollega fra Indien arrangeret konferencen International Conference on Green Computing and Engineering Technologies.

Det er planen, at disse konferencer skal afvikles i Esbjerg hvert andet år – ganske enkelt fordi Institut for Energiteknik i Esbjerg er internationalt anerkendt.

RTCSE'17: 4th International Conference of Gyancity at Kuala Lumpur, Malaysia

IMCES'17: 5th International Conference of Gyancity at Kuala Lumpur, Malaysia

IMCES'17: 5th International Conference of Gyancity at Kuala Lumpur, Malaysia

ICGCET'2018: 6th International Conference of Gyancity at Limerick, Ireland

RTCSE'2018: 7th International Conference of Gyancity at Bangkok, Thailand

ICGCET'18: 8th International Conference of Gyancity at Aalborg University, Esbjerg, Denmark

RTCSE'2019: 9th International Conference of Gyancity at Univeristy of Hawaii, USA

IMCES'2019:10th International Conference of Gyancity at Port Louis, Mauritius

ICGCET'2019: 11th International Conference of Gyancity at Casablanca, Morocco

RTCSE'2020: 12th International Conference of Gyancity at University of Hawaii, USA

9th International Conference on Recent Trends in Computer Science and Engineering (RTCSE) (Online and In-Person Conference)
25-26 June, 2025 Faculty of Information Technology, Yarsi University, Jakarta, Indonesia

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IMCES'2020: 13th International Conference by Gyancity at Jakarta, Indonesia

ICGCET'2020: 14th Conference by Gyancity at St Petersburg, Russia

The Northern Herald

Jammu, September 18: Dr. Amit Kant Pandit, Faculty, SoECE, SMVDU chaired an online session in 6th International Conference on Green Computing and Engineering Technologies (ICGCET®).

The international conference is scheduled from 16th-18th September 2020 at Herzen State Pedagogical University, St Petersburg, Russia. The traditional face-to-face meeting was replaced by the online meeting due to a pandemic situation. The first online session was conducted through CISCO WebEx app.

Dr. Pandit along with co-chair Dr. Bishwajeet Pandey, Birla Institute of Applied Sciences, Bhimtal Uttarakhand, and associated with Gyancity Research consultancy conducted the first session and an introductory talk.

The attendees across the world presented their work through an online meeting and recorded video presentations. The presentation and other videos are uploaded for public viewing on YouTube channel for wider academic sharing.

The convener of the conference Prof. Jason Levy, University of Hawaii, USA. Prof. Geetam S Tomar, Director Birla Institute of Applied Sciences, Bhimtal, India, congratulated on the successful organizing of the session.

Dr. Amit Kant Pandit thanked coordinators for arranging such academic meetings in difficult times.

SMVDU Faculty chairs Online Session at 6th International Conference on ICGCET

JAMMU BULLETIN NEWS
KATRA, SEP 18:

Dr Amit Kant Pandit, Faculty, SoECE, SMVDU chaired an online session in 6th International Conference on Green Computing and Engineering Technologies (ICGCET®) today. The international conference is scheduled from 16th-18th September 2020 at Herzen State Pedagogical University, St Petersburg, Russia. The traditional face-to-face meeting was replaced by the online meeting due to a pandemic situation. The first online session was conducted through CISCO WebEx app. Dr. Pandit along with co-chair Dr. Bishwajeet Pandey, Birla Institute of Applied Sciences, Bhimtal Uttarakhand, and associated with Gyancity Research consultancy conducted the first session and an introductory talk. The attendees across the world presented their work through an online meeting and recorded video presentations. The presentation and other videos are uploaded for public viewing on YouTube channel for wider academic sharing. The convener of the conference Prof. Jason Levy, University of Hawaii, USA. Prof. Geetam S Tomar, Director Birla Institute of Applied Sciences, Bhimtal, India, congratulated on the successful organizing of the session. Dr. Amit Kant Pandit thanked coordinators for arranging such academic meetings in difficult times.

RTCSE'2021: 15th International Conference of Gyancity at University of Hawaii, USA
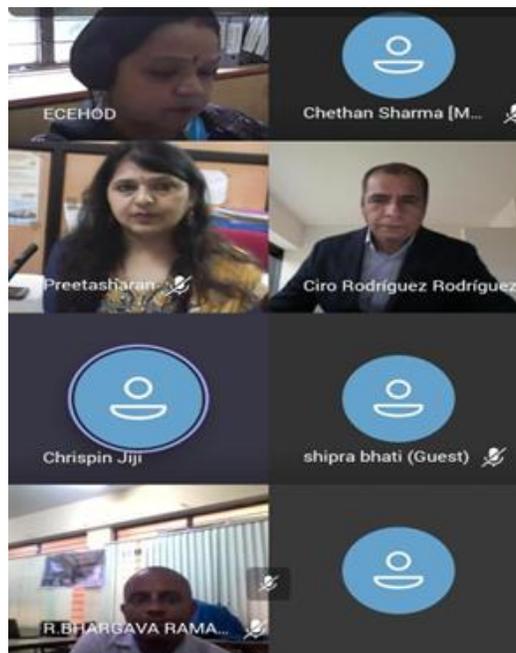
BMESS'2021: 16th Virtual Conference by Gyancity

IMCES'2021: 17th International Conference by Gyancity at Yarsi University, Indonesia
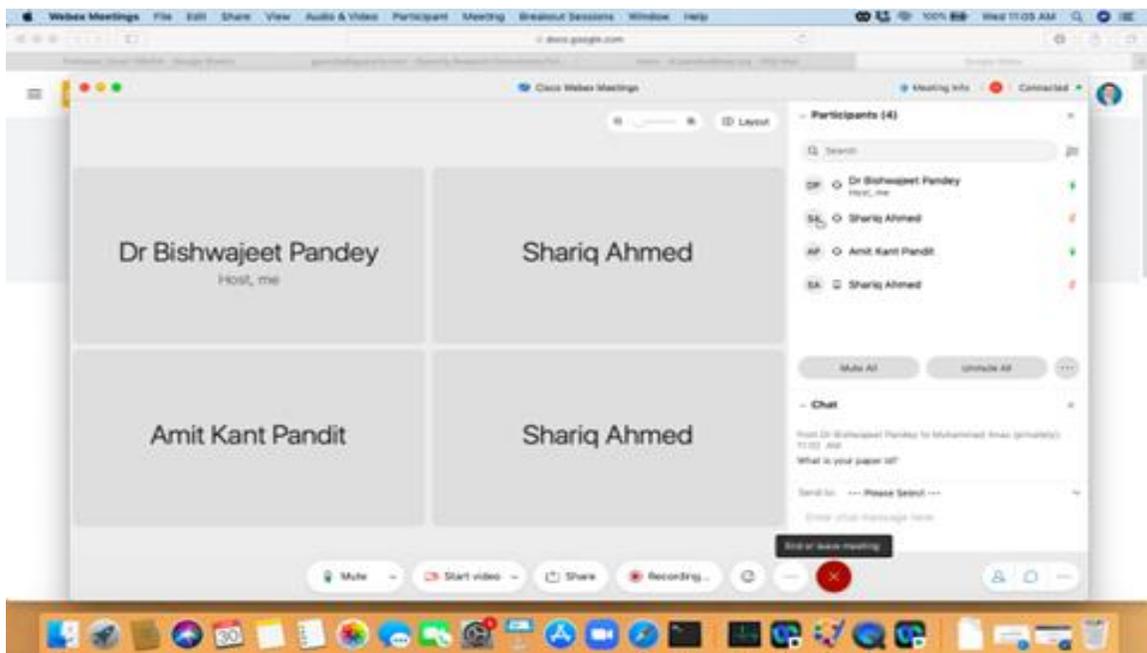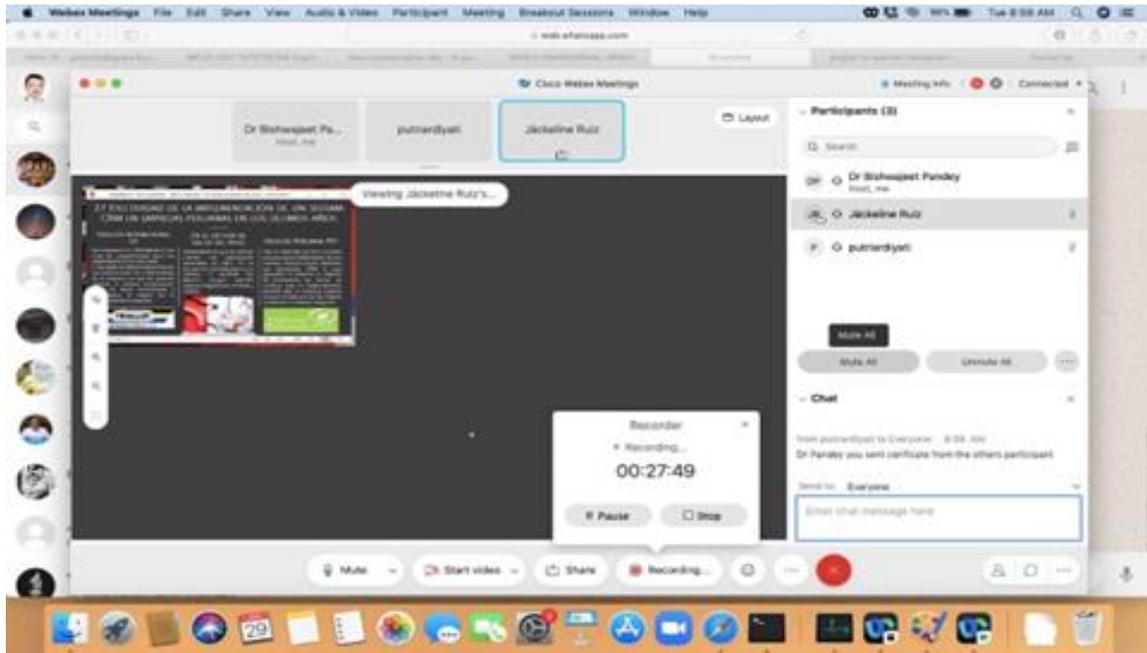
ICGCET'2021: 18th International Conference by Gyancity at National University of Federico Villareal, Lima, Peru

Evento se dará el 22 y 23 de septiembre. Foto: difusión

La República
larepublica_pe
ediciondigital@glr.pe

16 Set 2021 | 12:40 h
Actualizado el 16 de Setiembre 2021 | 12:40 h

Este 22 y 23 de septiembre se realizará la 7ª Conferencia Internacional sobre Tecnologías de Ingeniería y Computación Ecológicas 2021 (ICGCET-2021) y la 13ª Conferencia Internacional en Inteligencia Computacional y Redes de Comunicación 2021 (CICN 2021), eventos que tendrán como sede a la Universidad Villareal (UNFV).

Juan Alfaro, rector de la UNFV, será el encargado de inaugurar los referidos certámenes, el miércoles 22 a las 10.00 a. m. Previamente, Akbar Hussain, de la Universidad Aalborg de Dinamarca, será el encargado de brindar las palabras de bienvenida.

La ICGCET-2021 presentará las investigaciones de diferentes áreas de la ciencia y la tecnología, y proporcionará una plataforma para que investigadores y científicos de todo el mundo intercambien y compartan sus experiencias y resultados de investigación.

La República

ÚLTIMAS NOTICIAS   POLÍTICA   ECONOMÍA   SOCIEDAD   MUNDO   DEPORTES   ESPECTÁCULOS   RED

EN VIVO - Emmy 2021: sigue aquí la premiación a lo mejor de la TV y el streaming

NOTAS DE PRENSA

Conferencias internacionales se desarrollarán en Universidad Villarreal

Cada evento contará con la participación de destacados expertos de la investigación.

7th International Conference on Green Computing and Engineering Technologies
(ICGCET*)
22 - 23 September 2021
Universidad Nacional Federico Villareal (National University of Federico Villareal), Lima, Peru

ICGCET'2021: 18th International Conference by Gyancity at National University of Federico Villareal, Lima, Peru
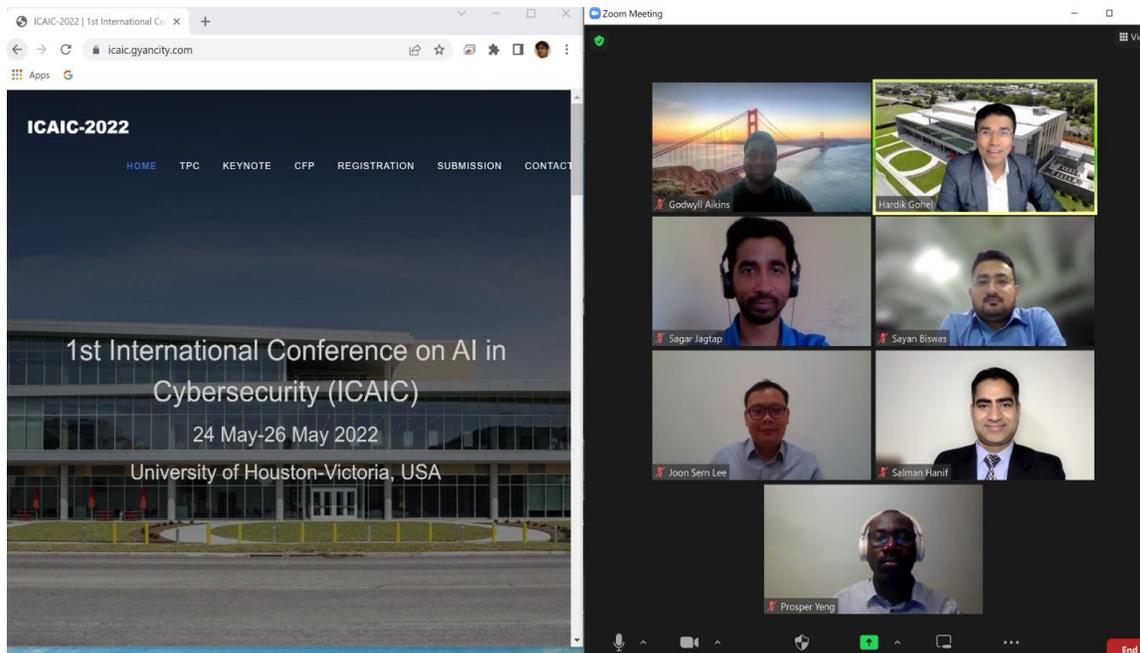
RTCSE'2022: 19th International Conference of Gyancity at University of Hawaii USA

BMESS'2022: 20th International Conference by Gyancity at Bath Spa University UAE

ICAIC'2022: 21st International Conference by Gyancity at University of Houston-Victoria, USA
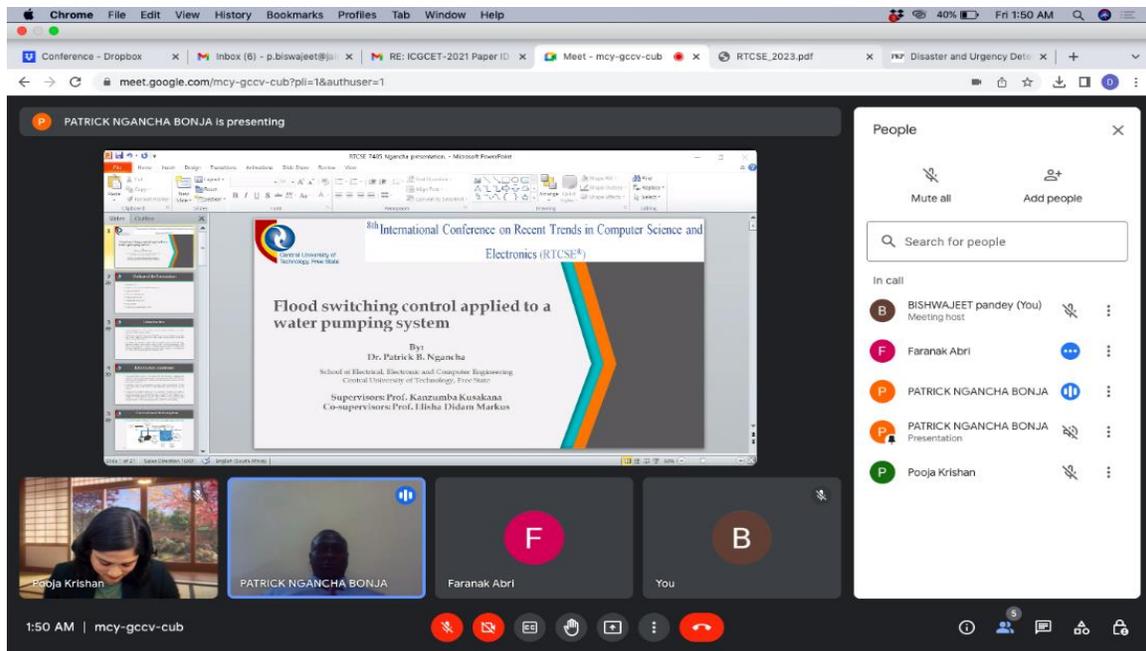
IMCES'2022: 22nd International Conference by Gyancity at Aalborg University, Esbjerg, Denmark
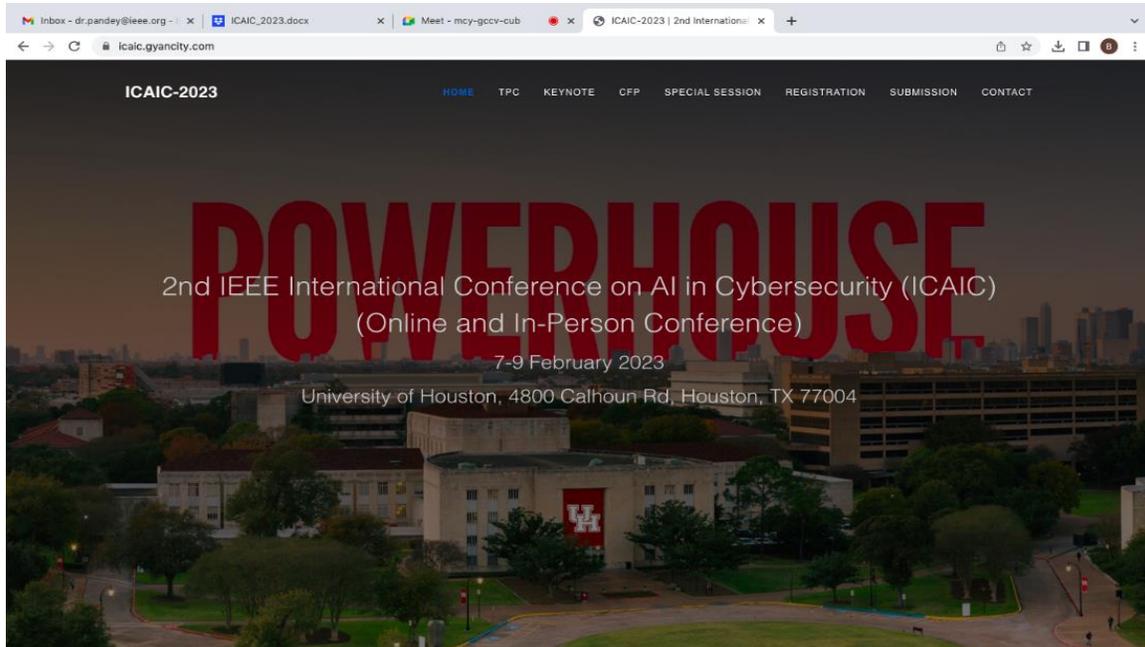
ICGCET'2022 GROUP PHOTO: 23rd International Conference of Gyancity at Mauritius

RTCSE'2023 GROUP PHOTO: 24th International Conference of Gyancity at University of Hawaii USA

ICAIC'2023 GROUP PHOTO: 25th International Conference of Gyancity at University of Houston-Victoria, USA

BMESS'2023 GROUP PHOTO: 26th International Conference of Gyancity at Bath Spa University, UAE
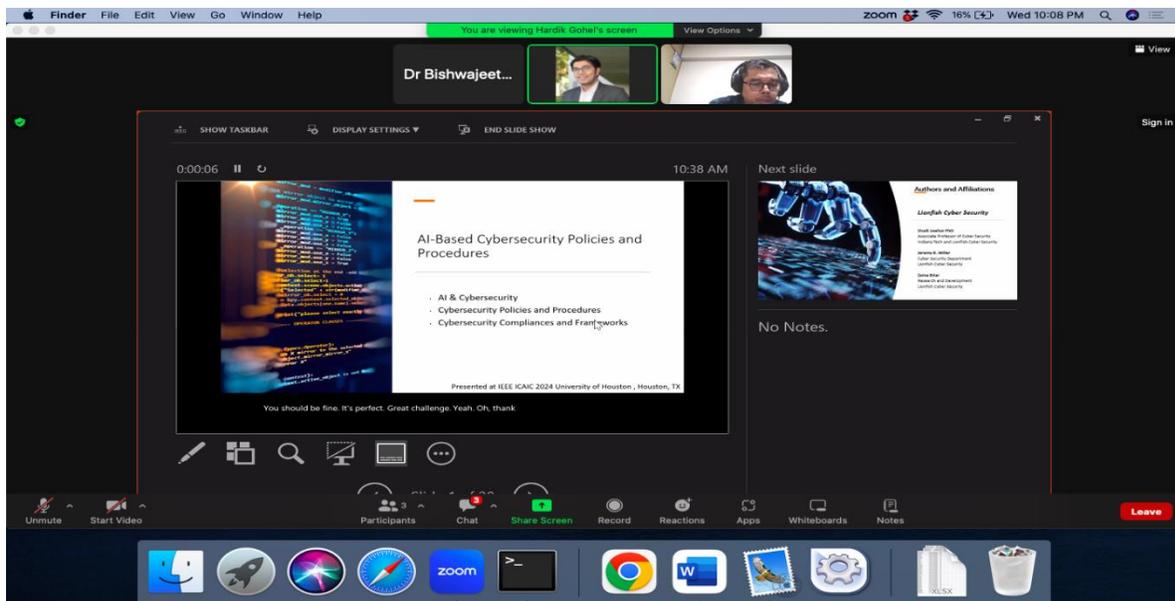
IMCES'2023: 27th International Conference by Gyancity at Yarsi University, Jakarta, Indonesia

ICGCET'2023: 28th International Conference by Gyancity at Cape Town South Africa

ICAIC'2024: 29th International Conference by Gyancity at University of Houston, USA

IMCES'2024 and BMESS'2024: 30th and 31st International Conference by Gyancity at Bath Spa University UAE

ICGCET'2024: 32nd International Conference by Gyancity at Sea Cliff Resort, Zanzibar

IEEE ICAIC'2025: 33rd International Conference by Gyancity at University of Houston, Texas, USA

Abstract of Paper Accepted in RTCSE-2025

1

Tech-Interactive Strategies to Strengthen Proficiency in English

Yaren Lorelly Fiestas Pulido
César Vallejo University, Lima, Peru.

ABSTRACT

The objective of the research was to determine the influence of tech-interactive strategies to strengthen the competence to communicate orally in English in high school students of an educational institution, 2023. Likewise, the research addressed the positivist paradigm, of an applied type, with a quantitative approach, quasi-experimental sub-design, of longitudinal section. The population was 96 students, with a sample of 92, calculated through non-probabilistic sampling for convenience, there were two groups, control and experimental, in the latter the application of the strategies tech-interactive, mentilluvi, genigames, canvamap, aprendizaje coopejam, comparacanv, jamzoomrol, sociojamzoom and expoflip were carried out. The instrument was an observation sheet with a total of 40 items, the validity was obtained by experts, and Cronbach's alpha was used for reliability. The results showed that 81.3% of the students achieved the expected achievement and 18.8% the outstanding one. The conclusion was that the influence of tech-interactive strategies to strengthen competence in English is significant, this means that the application of the strategies contributed to the strengthening of competence.

Keywords: Techinteractive strategies, learning, competence.

Abstract of Paper Accepted in RTCSE-2025

<table>
<tr><td>30</td><td>

Smart Alert System for Drowsy Driver using Haar Cascade Classifier and Dlib Facial Landmark

Siti Dhalila Mohd Satar*, Nazirah Abd Hamid, Roslinda Muda, Mohd Fadzil Abdul Kadir, Mohammad Afendee Mohamed, Nur Nadiah Binti Rosli,
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ABSTRACT

The rise in accident rates involving vehicles such as cars and lorries in Malaysia can be attributed, in part, to driving while drowsy. Various researchers have proposed different techniques for detecting drowsiness, with behavioral-based methods gaining popularity due to their non-intrusive nature. This study focuses to develop and evaluate the accuracy of a behavioral based drowsiness detection system by studying the characteristics of drowsy drivers. The research utilizes the Haar cascade classifier algorithm, Eye Aspect Ratio (EAR) algorithm, and Dlib Facial Landmark Algorithm to effectively detect drowsiness and fatigue. By continuously monitoring the EAR values and identifying when they frequently fall below a threshold value (0.23), the system triggers an alarm sound to alert the driver. The analysis conducted showed that this study achieved a higher level of accuracy, indicating that the algorithms used were highly effective in detecting drowsiness and fatigue with almost 100% accuracy in various conditions, including different lighting conditions (day and night). Consequently, this research contributes to the development of an efficient and reliable drowsiness detection system that can potentially mitigate accidents caused by driver impairment.

$\textbf{Keywords:}$ Smart alert system; Drowsiness detetction system; Haar cascade classifier; dlib facial landmark.

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Abstract of Paper Accepted in RTCSE-2025

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	## Design of a digital mobile radio network for a mission-critical communication

Nkosinathi Nhlanhla Nyawose[1], James Swart[2], Pierre Hertzog[3]

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ABSTRACT

The evolution of mobile communication has shifted from analogue to digital technologies, improving reliability, security, and efficiency. Professional Mobile Radio (PMR) systems have long been essential for Mission-Critical Communications (MCC), particularly in railway operations. However, analogue PMR is becoming obsolete due to spectral inefficiency, poor audio quality, and security concerns. This study explores digital alternatives such as Terrestrial Trunked Radio (TETRA), Long-Term Evolution (LTE), and Digital Mobile Radio (DMR), focusing on DMR as a viable replacement for PMR. A comparative analysis evaluates their suitability, followed by the design and simulation of a DMR pilot site. The findings contribute to knowledge on digital MCC solutions, supporting the adoption of modern communication technologies in railway operations to enhance operational efficiency and safety.

Keywords: Professional Mobile Radio (PMR), Terrestrial Trunked Radio (TETRA), Long-Term Evolution (LTE). Receive Signal Strength Indicator (RSSI)

Abstract of Paper Accepted in RTCSE-2025

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A Digital Twin of a Power Supply for Electrostatic Precipitators Designed in MATLAB/Simulink

N. Sekoebetlana, J. Raath, A.J. Swart

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Central University of Technology, Free State Bloemfontein, South Africa

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ABSTRACT

Power supplies form a critical part of an electrostatic precipitator as it plays a crucial role in collection efficiency. Collection efficiency refers to the percentage of particulate matter removed from a gas stream as it passes through collecting plates. One problem associated with this power supply is a high voltage ripple that appears at the output of a transformer rectifier unit. To solve this problem a power supply that tends towards an idealistic peak to mean voltage ratio of unity is sought. The purpose of this study is to design a digital twin of a power supply for an electrostatic precipitator using MATLAB/Simulink software and analyze its performance. The characteristics of the output parameters of the transformer rectifier unit are obtained for a controlled firing angle. Its nominal data is presented where the performance of the model shows a peak to mean voltage ratio of 1.3. It is recommended to modify existing power supplies so that the voltage tends towards the idealistic peak to mean voltage ratio of unity to enhance collection efficiency.

Keywords: Collection efficiency, Voltage ripple, Transformer rectifier unit

Abstract of Paper Accepted in RTCSE-2025

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Ethical and Regulatory in AI Agent Driven Financial Risk Management

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ABSTRACT

The implementation of Artificial Intelligence (AI) agents within financial risk management systems resulted in transformations in decision-making processes, enabling institutions to detect fraud, asses creditworthiness, and optimize risk models with unprecedented accuracy. Increasing reliance on AI introduces significant ethical and regulatory challenges, in a way triggered by quick adoption of these technologies. This paper investigates fundamental challenges that include algorithmic prejudice along with opaque system processes and personal data risks and indefinite responsibility standards. The paper examines worldwide regulatory fragmentation by focusing on how the EU takes leading roles while the United States runs its regulatory operations independently. The paper examines the rising necessity of establishing ethical AI governance frameworks by presenting examples and relevant statistical information about algorithmic assessments and human control systems and explainable models. The findings demonstrate why financial organizations must strike a correct balance between new technologies and responsible practices and regulatory guidelines for producing ethical and transparent AI systems in financial applications. The study recommends developing international partnerships alongside strict oversight mechanisms to create AI systems which maintain financial stability while preserving public trust and fairness.

Keywords: Low-field MRI, High-field MRI, Synthesized images, Superresolution models, Deep learning

Abstract of Paper Accepted in RTCSE-2025

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	## Monte Carlo-Based Textual Gradient Descent: A Mathematical Framework for LLM Optimization

Temirbek Atabekov, Polina Dolmatova
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ABSTRACT

This paper combines traditional optimization theory with modern Natural Language Processing (NLP) by formalizing Textual Gradient Descent (TextGrad) within a measure-theoretic framework. We introduce the concept of Expected Textual Loss, a Monte Carlo-inspired approach that enables gradient-based methods in discrete text spaces. Our version speeds up optimization by adding systematic input distribution sampling to TextGrad. Experimental validation on object counting tasks shows that our Monte Carlo TextGrad approach achieves better results than baseline models and conventional TextGrad implementations with smaller number of training iterations.

Keywords: Textual Gradient Descent, Monte Carlo Methods, LLM Optimization, Measure Theory, Expected Textual Loss

Abstract of Paper Accepted in RTCSE-2025

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Architecting Secure E-Commerce Systems: A Technical Deep Dive into AI, Blockchain, and Biometric Fusion for Fraud Prevention

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ABSTRACT

The growing prevalence of e-commerce in global digital economies attracts more advanced forms of fraudulent practices. Security methods from the past have shown their limitations against the combination of assaults that target identity checks, transaction authentication mechanisms, and data integrity systems. A detailed technical model of secure e-commerce system development emerges by integrating present-day technologies across AI/ML with Blockchain cryptography and Biometric signal processing systems. The discussion analyzes leading-edge AI structures, updated cryptographic algorithms, and integrated biometric methods, resulting in a single fraud detection platform. The project covers system integration difficulties while validating performance and delivering complete specifications at mathematical, procedural, and protocol levels. The paper evaluates results against industry standards before examining how edge devices and federated learning models can implement this system.

Keywords: Artificial Intelligence (AI), Machine Learning (ML), Transformer Networks, Graph Neural Networks (GNNs), Fraud Detection, E-Commerce Security

Abstract of Paper Accepted in RTCSE-2025

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Enhancing Malware Defense in Windows OS Through Ethical Malware Development and Agile-Based Simulation Framework

Nazirah Abd Hamid*, Siti Dhalila Mohd Satar, Ahmad Faisal Amri Abidin @ Bharun, Mohd Fadzil Abdul Kadir, Mohammad Afendee Mohamed, Shamil Hakimi Shamsul Bahrin

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ABSTRACT

The widespread use of Windows operating systems has made them a primary target for malware attacks. While numerous studies focus on detecting and defending against such threats, there is limited research exploring the ethical development of malware to better understand its behavior and improve system defenses. This paper addresses that gap by proposing a practical and controlled approach to malware creation, designed specifically for research and educational purposes. The aim is to build and evaluate a non-malicious malware framework that can simulate real-world attack techniques without causing actual harm. Using the Agile development model, the malware was constructed in stages—comprising a dropper, a payload, and evasion methods—and tested in a secure virtual environment. Written in Python and C, the prototype was assessed through antivirus scans and performance stress tests. Results indicated that the malware avoided detection and replicated key attack behaviors, offering valuable insights into existing system vulnerabilities. This work provides a responsible methodology for studying malware in depth and contributes to the advancement of more effective and adaptive cybersecurity strategies.

Keywords: Ethical Malware Development, Windows OS Security, Agile Methodology

Abstract of Paper Accepted in RTCSE-2025

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A Robust Algorithm for Identifying Malicious IPs Enhancing Cybersecurity Defense

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ABSTRACT

The rise in cyberattacks intended for enterprises has made the detection and classification of malicious IP addresses an essential aspect of cybersecurity. Manual IP reputation assessments are time-consuming and insufficient for high-velocity environments,such as Security Operations Centers (SOCs) in cybersecurity. This paper presents an automated, multi-source system for categorizing IPs as "good" or "bad." It implements APIs from AbuseIPDB and VirusTotal, integrating their threat intelligence ratings to offer real-time IP analysis. The system performs an analysis of usersubmitted IP addresses, acquires threat data from two APIs, computes a weighted score, and categorizes each IP. Experimental evaluations demonstrate proper classification, facilitating quicker IP reputation tests compared to traditional static methods. This system enables analysts to concentrate on critical duties and enhance incident response times by providing SOCs with real-time, scalable IP classification. This system provides security analysts with a rapid and reliable instrument for threat detection and response.

Keywords: Cybersecurity", "Threat Intelligence", "IP Reputation", "AbuseIPDB Integration" "VirusTotal API", "SOC Automation" "Cybersecurity Defense"

Abstract of Paper Accepted in RTCSE-2025

60

GPON vs. Traditional Switch Network Technology: A Comparative Analysis

M.S.A. Bakar[2], A.R.A. Nazren[1], Ahmad R.B.[1], I.N.M. Shaharanee[3], I. Ismail[1], Safar, M.A.[1], Wan Aida Nadia Wan Abdullah[2]

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ABSTRACT

The rapid evolution of networking technologies has introduced significant advances with the adoption of Gigabit Passive Optical Networks (GPON) and traditional Ethernet switch networks. GPON, a fiber-optic technology, provides high-speed, cost-effective solutions for large-scale deployments like residential broadband and smart cities. This paper presents a comparative analysis of GPON and traditional Ethernet switch networks, examining network architecture, performance, scalability, cost-effectiveness, and application suitability. Through mathematical modeling, this study examines trade-offs between the technologies in terms of throughput, delay, and network efficiency. While GPON excels in large-scale, cost-effective deployments with passive components, traditional Ethernet switches offer reliable, dedicated bandwidth for performance-sensitive applications. The findings provide insights for network administrators and decision-makers, helping them select appropriate technology based on specific use cases like residential broadband, enterprise networks, and data centers.

Keywords: GPON, Ethernet switches, fiber-optic networks, network architecture, bandwidth, scalability, cost analysis.

Abstract of Paper Accepted in RTCSE-2025

63	## Issues and Challenges in Ciphertext-Policy Attribute-Based Encryption for Secure Cloud Storage

Siti Dhalila Mohd Satar[1,3], Masnida Hussin[2], Mohamad Afendee Mohamed[1],
Nazirah Abd Hamid[1], Ahmad Faisal Amri Abidin[1], Nor Aida Mahiddin[1,3]
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ABSTRACT

The rapid growth of cloud computing has revolutionized data storage, offering significant benefits in terms of scalability and accessibility. However, these advantages come with critical security challenges, particularly in ensuring data confidentiality and access control. Ciphertext-Policy Attribute-Based Encryption (CP-ABE) has emerged as a promising solution to these challenges. This paper provides a comprehensive review of the key issues associated with CP-ABE in cloud storage, focusing on ciphertext size, multi-authority architecture, user revocation, and access policy hiding. Through an extensive literature review spanning studies from 2015 to 2023, we identify current solutions and highlight their limitations. Our analysis reveals that while significant progress has been made in reducing ciphertext size and improving multi-authority systems, challenges remain in efficient user revocation and robust access policy hiding. Key results indicate that hybrid encryption techniques and dynamic policy updates are effective in addressing some of these issues. The implications of our findings suggest that future research should focus on enhancing these techniques and developing more integrated approaches to overcome the persistent challenges in CP-ABE, thereby improving the security and efficiency of cloud storage systems.

Keywords: Access control, Ciphertext Policy Attribute based Encryption (CP-ABE), CP-ABE issues, Cloud Security, Cloud Storage.

Abstract of Paper Accepted in RTCSE-2025

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Diabetes Prediction Using Optimized Ensemble Techniques

Manunur Rashid Alex
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Md. Maruf Hassan*
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ABSTRACT

Among the most common chronic diseases worldwide, diabetes greatly increases morbidity and mortality. Notwithstanding developments in ensemble methods for medical diagnostics, problems such as class imbalance, high-dimensional data, and interpretability remain unresolved. This work suggests a methodical technique for diabetes prediction from a publicly available dataset. Robust data preprocessing (outlier removal, feature transformation, Synthetic Minority Over-sampling Technique (SMOTE) for class imbalance), feature engineering, and hyperparameter optimization using GridSearch and Bayesian approaches form part of our approach. Stratified KFold ensures that the model can generalize better and reduce the chance of bias towards the more common class. With test accuracies of 97.18%, 97.21%, and 97.20%, respectively, assess and contrast three models: Random Forest (RF), Decision Tree (DT), and XGBoost, where XGBoost has good predictive performance. While it excels in interpretable feature selection, our results show XGBoost beats DT and RF in accuracy, precision, and F1-score. This study compares modern ensemble methods for disease prediction and emphasizes the need for preprocessing and optimization in improving model generalization.

Keywords: Ensemble Learning, XGBoost, Diabetes prediction, Cross-validation

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Deep Analysis of Image Classification Architectures for Detecting Cancer Cells from Histopathological Images

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ABSTRACT

Manual detection of cancer cells from the histopathological image is a very tiring, timeconsuming process for histopathologists, and many human errors can occur. Therefore, many computer-based detection processes have been invented, giving better results than the manual detection process. Although several architectures have been introduced, it becomes the question of which architecture gives us the best result for detecting cancer cells. In this proposed framework, we have analyzed five deep Convolutional Neural Network architectures such as VGG16, MobileNetV3, InceptionV3, Xception, and DenseNet121, which have been trained and tested on the lung cancer and colon cancer datasets, present the performance comparison between them and found out the best image recognition and classification architecture which have given me the utmost accuracy for detecting any type of cancerous histopathological cell.

Keywords: Histopathological cell image, Deep Convolutional Neural Network, VGG16, VGG19, ResNet50, ResNet152, Xception, DenseNet12, Image Classification

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Abstract of Paper Accepted in RTCSE-2025

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Artificial Intelligence in Nanotechnology: Key Methodologies and Their Transformative Impact

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ABSTRACT

The integration of artificial intelligence (AI) with nanotechnology is generating remarkable improvements by tackling fundamental difficulties in material design, defect detection, process optimization, and scientific information extraction. This research covers four important AI methodologies Machine Learning (ML), Deep Learning (DL), Reinforcement Learning (RL), and Natural Language Processing (NLP)—emphasizing their strengths, applications, and limitations in nanotechnology. ML excels in predictive modeling and classification, DL boosts imaging and flaw detection, RL optimizes autonomous nanorobotics, and NLP promotes effective information extraction from huge scientific data. Notwithstanding these capabilities, challenges such data reliance, computational complexity, and scalability remain, underscoring the necessity for domain-specific solutions and interdisciplinary collaboration. This paper identifies critical research gaps, offering practical insights for the advancement of AI-driven nanotechnology. The findings underline AI's transformative potential in changing material science, biomedical applications, and nanoscale engineering, paving the path for creative solutions at the molecular and atomic levels.

Keywords: Artificial Intelligence", "Nanotechnology", "Machine learning", "Deep learning" " Reinforcement Learning ", " Natural Language Processing"

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	## Fairness in Serverless Inference

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ABSTRACT

Multi-tenant serverless inference often devolves into noisy-neighbour scenarios where a single tenant's bursty LLM batch floods the fleet, pushing interactive calls beyond their latency budgets. We propose Burst-Aware Weighted Fair Queueing (BWFQ) - a scheduler that needs only two counters per tenant (tokens earned, tokens spent) and a constant-time heap pop to pick the next invocation. BWFQ adapts the classic token-bucket shaper: tokens accrue at a tenant-specific base rate and are debited on each dispatch; when a tenant exhausts tokens its requests are queued, letting quieter tenants run. Unlike Dominant-Resource Fairness, BWFQ requires neither per-invocation resource profiling nor multi-dimensional share accounting, making it trivial to bolt onto existing Lambda-style dispatchers. Evaluated on an AWS Lambda prototype scaled to 1 000 concurrent functions, BWFQ shrinks the P99 latency gap between interactive and batch tenants from 12 s to 1.8 s - a $6.7 \times$ improvement - while preserving 96 % of the throughput achieved by First-Come-First-Serve. The algorithm adds only $\approx 30\,\mu s$ of scheduling overhead per decision and fits in <150 lines of Go code. These results demonstrate that simple token-bucket fair queueing is a practical, immediately deployable step toward fairness in production serverless inference.

Keywords: Serverless, Inference, Multi-Tenant, Burst Aware Weighted Fair Queuing

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Cybersecurity Technology on Heavy Equipment: A Systematic Literature Review

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ABSTRACT

The Industry 4.0 era has brought significant transformation in various industrial sectors through the integration of digital technologies such as Cyber-Physical Systems (CPS) and the Internet of Things (IoT). However, the application of these technologies to heavy equipment faces cybersecurity challenges, especially in managing risks after the warranty period ends. This research aims to identify the latest trends, methods, and findings related to cybersecurity technologies in heavy equipment, published on Scopus in the period 2021 to 2025. The methodology used is Systematic Literature Review (SLR), which involves keyword-based screening of articles with a focus on relevant research objectives, methods and results. The results show that the main challenges in machine cybersecurity are the lack of post-production maintenance, the high cost of software updates, and the low adoption of technology by Original Equipment Manufacturers (OEMs). In addition, technologies such as Digital Twin (DT), CPS, IoT, and artificial intelligence (AI) offer potential solutions to improve cybersecurity, particularly through real-time monitoring, data transparency, and security system automation. The research also found that security system automation can significantly reduce operational risk by detecting and responding to threats faster than manual approaches. The implication of this research is the need for further exploration to bridge the gap between cybersecurity technology development and its application in industrial environments, particularly in heavy equipment.

Keywords: Cyber-Physical Systems; Digital Twin; industry 4.0; cybersecurity; heavy equipment.

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An Analysis of 72 PhD Theses from the Central University of Technology over A 5-Year Period Yields Notable Insights

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ABSTRACT

The successful completion of a PhD study is a noteworthy achievement that few people in the world experience. It represents the pinnacle of academic studies at a university which opens the doors to several opportunities. Despite the benefits associated with a PhD degree, it remains a daunting task. The purpose of this study is therefore to present an analysis of 72 PhD theses that were completed over a 5-year period (2014 – 2018) at the Central University of Technology (CUT), Free State, to help prospective doctoral candidates to better understand what is required, or acceptable, at this level of research. It can further create awareness among researchers in Higher Education about the type of research that was completed at CUT over this period. An ex-post facto study is employed where informetric analysis is used to obtain quantitative data. Key results indicate that 61% of the PhD students worked under the guidance of two or more promotors. 44% of the theses contained between 200 and 300 pages, with none below 100. PDF file sizes varied from less than 2 MB to more than 12 MB. A recommendation is made to create awareness among prospective doctoral candidates of the results of this study, further encouraging them to also include a sentence in their abstracts that clearly defines the scientific contribution of their study. Article Details Issue.

Keywords: quantitative, data analytics, structure, format

Abstract of Paper Accepted in RTCSE-2025

159	## Creating Brand Resilience: A Termite Framework approach for Brand Resilience Sustainability in Businesses
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	ABSTRACT
	In today's volatile business environment, brand resilience is crucial for survival. Drawing inspiration from the resilient termite mounds found in Africa, this paper proposes a Termite Framework for building sustainable brand resilience. The framework consists of five pillars: Resilience, Adaptation, Cooperation, Resourcefulness, Endurance (RACRE). Most brands in businesses fade and disappear in the market within a short period of time. It is with great concern that businesses need to build brand resilience, in products and services to meet globalisation changes for sustainability. The environment is DVUCADD meaning it is dynamic, volatile, uncertain, complex, ambiguous, diversity and disruptive. There is imminent need for brand resilience. This study proposed a model framework focusing on termite behaviour and cooperation. Resilient brands are adaptive, change direction, take knocks and setbacks and come back stronger. These brands can easily extend to new products, take their customers with them and take new business models. Main characteristics of resilient brands is setting goals and priorities, having a strategy, working together, uncover new threats proactively, regrouping and retesting. In retesting and regrouping brands that are resilient protect their customers, reputation and revenue continually refining their tactics. In this sense they communicate failures and success to team members to reevaluate their methodology until desired results are achieved. **Key words: termites, brand resilience, sustainability, endurance, cooperation**

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02-04 March 2026

Sydney, New South Wales, Australia