ICAC 2025

The 7ᵗʰ International Conference on Advancements in Computing 2025

Monarch Imperial, Sri Jayawardenepura, Kotte, Sri Lanka - 09ᵗʰ & 10ᵗʰ December 2025

Detailed Program Overview

Conference Day 1 - 09th December	
8:15 am to 8:50 am	Registration
9:00 am to 9:15 am	Opening Remarks
9:15 am to 9:20 am	Welcome Address by Prof. Nuwan Kodagoda, Pro Vice Chancellor, Faculty of Computing, SLIIT, Sri Lanka
9:20 am to 9:30 am	Speech by Prof. Lalith Gamage, Vice Chancellor | MD | CEO, SLIIT, Sri Lanka
9:30 am to 10:10 am	Keynote Speech 1 - By Prof. Igor Bray, John Curtin Distinguished Professor, Faculty of Science and Engineering, Curtin University, Australia
10:10 am to 10:40 am	**Tea Break**
10:40 am to 11:20 am	Keynote Speech 2 – By Prof. Carson Kai-Sang Leung, Professor, Department of Computer Science, Faculty of Science, University of Manitoba, Canada
11:20 am to 11:25 am	Cultural Performance
11:25 am to 11:55 am	Keynote Speech 3 – By Dr. Himal A. Suraweera, Senior Lecturer, Department of Electrical and Electronic Engineering, Faculty of Engineering, University of Peradeniya, Sri Lanka
11:55 am to 12:05 pm	Tokens of Appreciation
12:05 pm – 12:15 pm	Invited Presentation - By Mr. Basavadarshan G N - Senior Academia Partnership Manager – APAC, MongoDB
12:15 pm – 12:25 pm	Tokens of Appreciation
12:25 pm – 12:30 pm	Vote of Thanks - By Dr. Prasanna Sumathipala, SLIIT, Sri Lanka, General Chair of ICAC 2025
12.15 pm to 12.45 pm	**Conference Photo**
12.45 pm to 1.45 pm	**Lunch Break**
End of the Plenary Session	

Technical Sessions			
Technical Session A 2.00 pm to 3.30 pm	**A.S1:** IoT, Embedded Systems and Robotics	99	Towards Autonomous Strawberry Pollination via IoT and Robotics
		269	A Wireless Communication System for Hyper localized Pest Management using Autonomous Micro-Robot Swarms in Sri Lankan Rice Paddy Fields
		404	An Integrated Architecture for a Real-Time Robotic Piano Co-Player: Design, Embodiment, and Validation
		422	*Dynamic Edge Server Selection in Time-Varying Environments: A Reliability-Aware Predictive Approach*
	A.S2: Artificial Intelligence & Machine Learning	19	DementiaGuard – Integrated Digital Healthcare Solution for Dementia Care
		313	Classifying the Heated and Unheated Sapphire Gems Using Microscopy Images Based on Multiple Tree Models
		319	Analysis of ML models in detecting and mitigating anomalies in healthcare networks.
		337	Beyond the Black Box: An Interpretable Machine Learning Approach to Student Dropout Prediction
		454	XAI Techniques used in Medical Image Classification: A Modality-specific Analysis

Technical Session A 2.00 pm to 3.30 pm	**A.S3:** Artificial Intelligence & Machine Learning	205	ElectS: Advanced E-Voting System with Facial Recognition
		356	A Comprehensive Review of Machine Learning Approaches for Handling Class Imbalance in Credit Card Fraud Detection
		358	A Deep Learning Approach for Papaya Disease, Pest and Maturity Identification via Mobile Imaging
		457	Generative AI-Based Chatbot for Customer IT Support Automation
		475	EEG Based Motor Imagery Signal Processing and Building a classifier
	A.S4: Artificial Intelligence & Machine Learning	72	Adaptive Video Game Content Generation Through Player Centered Modeling
		264	A General Classification Framework for Detecting AI-Generated Voices
		305	FalconEye: Real-Time Bird Detection and Tracking System for Aviation Safety
		364	Intelligent Traffic Signal Optimization Using Sound-Based Ambulance Detection and Green-Light Extension
		375	Machine Learning-Based Framework for Predicting Vehicle Arrival Times in Public Transport
	A.S5: Computer Vision & Image Processing	361	Vision-Based Temporal Classification of Correct and Incorrect Weightlifting Exercises
		366	Optimizing Data Annotation Strategies for Overlapping Objects in AI-Based Waste Sorting Systems.
		369	Machine Vision-Enabled Driver Safety and Monitoring System with Arduino for Real-Time Detection of Drowsiness and Drunkenness
		374	Object Detection Approach for Pure and Cross Chicken Breed Identification
Tea Break			
Technical Session B 4.00 pm to 5.30 pm	**B.S1:** Cybersecurity & Privacy	180	Mobile Integrated Continuous Authentication & Verification Ecosystem
		274	IDPS for Targeted Attacks in VR Headsets Chaperone, Inception, Human Joystick Attacks
		304	Dual-Architecture URL Phishing Detection System: A Comprehensive Approach Using Lightweight Browser Extensions and Deep Analysis Models
		328	Federated learning for detecting anomalies in IoT-driven smart home systems
	B.S2: Computing for Education and Digital Learning	103	Gamified Deep Learning-Based Strategies for Supporting Speech and Motor Skill Development in Children with Autism
		280	Profiling Industry 5.0 Readiness: A Machine Learning Approach to Student Soft Skills
		298	Deep Learning Based Approach to Enhanced Recognition of Emotions and Behavioral Patterns of Autistic Children
		385	Perceptions and Adoption of Generative AI Tools Among Undergraduate Students: An Integrated UTAUT and Social Cognitive Theory Perspective.
	B.S3: Artificial Intelligence & Machine Learning	302	AI Powered Context Aware Emergency Sound Recognition System for Enhancing Situational Awareness in Hearing Impaired Individuals
		373	PharmaMap-LLM: Fine-Tuning Large Language Models for Drug-Drug Interaction (DDI) Analysis
		421	AI Enabled IoT Architecture for Remote Cardiac Monitoring: Deep Learning Driven Arrhythmia Detection and Telemedicine Deployment in Rural Sri Lanka
		468	Data-Driven Injury-Risk Prediction in Competitive Swimming Using Convolutional Neural Networks
		485	Deep Ensemble Model for Fine-Grained Breast Tumor Classification Across Multi-Magnification Samples
	B.S4: Artificial Intelligence & Machine Learning	368	Development of EEG Acquisition Device for Human Stress Level Monitoring and Analysis
		453	Personalized AI System for Maternal Nutrition and Exercise
		462	Automated Mitosis Grading in Histopathology Images using YOLO with Customized Squeeze-and-Excitation and Spatial Attention
		469	Data-privacy based Federated Learning Framework for Industrial IOT

		107	Ayur Prakrithi: A Deep Learning-Based Prakrurthi Diagnostic Tool for Ayurvedic Medicine Students and Practitioners
	B.S5: Computer Vision & Image Processing	136	Eye Health Monitoring and Eye Care System
		413	Computer-Vision-Based Multipurpose Artificial Intelligence Assistant for Smart Refrigerators
		434	MotionMetrics: A Hybrid Stereo Marker and Markerless System for Cost-Effective 3D Sports Biomechanics
End of the Day 01			

Conference Day 2 – 10th December			
8.30 am to 9.00 am	Registration		
Technical Sessions			
Technical Session C 9.00 am to 10.30 am	**C.S1:** Cloud, Quantum and Communication Technologies	270	Evaluating Performance and User Perceptions of Multi-Cloud Database-as-a-Service Solutions: A Mixed-Methods Study
		460	From NISQ to Scalable Architectures: Challenges and Prospects for Practical Quantum Computing
		481	Fidelity-Driven Physically-Constrained Adaptive Code Distance for Surface Codes under Biased Circuit-Level Noise
		466	Resilience-Aware Minimum Dominating Set Selection: A Novel Approach for Cost-Effective and Resilient Network Design
		401	*Secrecy Rate Performance Evaluation for Next-Generation Wireless Networks*
	C.S2: Software Engineering & DevOps	125	A Scalable Microkernel Inspired Architecture for Transparent and Adaptive Supply Chain Management
		132	Agile User Story Builder – Transform real-time user requirement conversations into well-structured Agile user stories
		171	Optimizing Gas Efficiency in Ethereum Smart Contracts Using Design Pattern Refinement and Complexity Reduction
		354	Context-Aware Incremental Learning Pipeline Triggers
		474	Adapting Microlearning for Personalized Study Journeys: CLT-BLM Guided Video Shorts with AI-Driven Re-Authoring
	C.S3: Cybersecurity & Privacy	124	An Approach to detect Advanced Persistent Threats using Machine Learning Techniques
		178	Blockchain-Enabled Product Passport for Transparent Tea Supply Chains
		307	Robust DoS Attack Detection for V2X Networks Using RNN Variants with Attention
		312	A Sysmon Event-based Machine Learning Approach to Ransomware Detection
	C.S4: Artificial Intelligence & Machine Learning	78	Data-Driven Insights for Improved Diabetes Management
		275	Framework for Ethical Governance of Autonomous AI Systems: Balancing Innovation, Accountability, and Risk Management
		344	Optimizing Retail Pharmacy Inventory via Descriptive and Predictive Analysis
		459	Optimizing LLMs for Context-Sensitive Text Summarization: Insights from PLOS and SciSummNet
		471	ARISE: A Multisensory AR Support Tool for Surface Dyslexic Readers

Technical Session C 9.00 am to 10.30 am	**C.S5:** Computer Vision & Image Processing	309	Video-Centric Deepfake Detection: Leveraging Audio and Spatio-Temporal Features for Improved Accuracy
		330	Detection and Mitigation of Urban Heat Island Effect Using Vision-Language Models
		415	Key Player and Key Connection Problems in Brain Networks
		426	AI-Driven 3D Avatar Framework for Sign Language Translation and Gesture Representation
	C.S6: Artificial Intelligence & Machine Learning	*281*	*Adaptive Exploration in Deep Reinforcement Learning via Uncertainty-aware State Representation*
		484	*Soccer In-Game Event Classification Using Spatio-Temporal Data*
		486	*A Novel Objective function for Counterfactual Explanations using Conic Optimization*
		299	*Global Disparities in Green Computing Policy Adoption in Higher Education: A Six-Region Survey*
		407	*Analysis of Deep and Graph Neural Networks for Enhanced DDoS Attack Detection: A Pathway to Hybrid Models*
Tea Break			
Technical Session D 11.00 am to 12.30 pm	**D.S1:** Computer Vision & Image Processing	432	Few-Shot Learning for Early Detection of Coconut Whitefly Infestations Using Low-Label Leaf Image Data in Sri Lanka
		443	PoseFit: A Home Workout Companion
		446	Explainable AI-Driven Diagnostic Framework for Early Vascular Dementia Detection Using MRI
		414	*A Lightweight Convolutional Neural Network Framework for Multiclass Brain Tumor Identification*
	D.S2: Computing for Education and Digital Learning	141	Comprehensive Smart Assignment Assessment Tool Using Large Language Models
		172	EduNova: An Adaptive Gamification-Driven Framework for Enhancing Learner Engagement and Retention in Digital Education
		325	EDU-SENSE: AI-Driven Adaptive E-Learning System for Primary Education
	D.S3: Human-Computer Interaction & UX Design	174	Virtual Reality Scuba Diving Simulator: Supplementing Real-World Training While Addressing HCI Challenges
		186	Virtual and Augmented Reality Approach to Exposure Therapy: Gamified solution for Treating Aerophobia, Claustrophobia, Arachnophobia, and Cynophobia
		187	Augmented Reality-Driven Customization Platform: A Unified Framework for Designing and Visualizing Fashion Accessories and Apparel
		189	Tranquil, Enhancing Student Well-Being through personalized Mindful Activities for Stress Reduction
	D.S4: Artificial Intelligence & Machine Learning	54	AI-Driven Behavioral Assessment and Intervention for ADHD
		134	HCLIP: Beyond CLIP for Cost-Effective Multimodal Retrieval in Education
		297	CINNOVA : Advancing Sustainable Cinnamon Farming through AI and Collaborative Solutions
		371	Alpha boost AI - Exploring challenges in Early English Literacy Development using AI
		376	Emission-Aware Multi-Metric Reinforcement Learning for Adaptive Traffic Signal Control in Sri Lanka
	D.S5: IoT, Embedded Systems and Robotics	336	AI-Driven Autonomous Bee Health and Ecosystem Management System
		456	Unveiling EEG Emotional Patterns During Interactive Engagement Activities: A Performance Comparison of Machine Learning Models.
		464	IoT Based System for Early Detection and Monitoring of Mosquito Breeding Sites
Lunch Break			
Technical Session E 1.30 pm to 3.00 pm	**E.S1:** Human-Computer Interaction & UX Design	173	Evaluating the Effectiveness of Mind Heaven: A Virtual Reality Meditation Solution Based on Theravāda Buddhist Practices
		266	A Comprehensive Review of Sri Lankan Sign Language Recognition and Sinhala Text/Speech to Sign Language Translation Technologies
		387	A Virtual Reality Immersive Experience of Sri Lanka's Sacred Heritage: VR Meditation Experience at the Ruwanweli Maha Seya Using Heart Rate and HRV Tracking.
		400	*Exploring Spatial Proximity and Relationships in a Multi-Perspective VR Game Design*

Technical Session E 1.30 pm to 3.00 pm	**E.S2:** Natural Language Processing & Speech Technologies	338	Bimodal Speech Emotion Recognition for the Customer Service Domain
		355	Explainable Multilingual Sentiment Analysis for Sinhala, English, and Code-Mixed Banking Reviews
		402	'NoFake' Trustworthy Reviewer Scoring System for Detecting Fake Reviews
		473	Monolingual Transformer-Based Detection of Altered Profanity in Sinhala Facebook Comments
	E.S3: Sustainable Socio-Economic Ecosystems	131	Project Management Predictive Framework
		396	Digital Collaboration Through BIM and Its Influence on Project Success in Socio-Economic Contexts
		440	Conflict-Driven Disruptions in Maritime Logistics: A Global Evidence Synthesis
		450	Reducing Cancer Mortality Inequalities: The Role of Education, Socioeconomic Factors, and Digital Ecosystem Interventions
	E.S4: Artificial Intelligence & Machine Learning	105	MOODZ: A Mobile Application of Mechanisms for Alleviation of Human Depression
		383	MindTrack360: Bipolar Risk Detection of Youth through Social Media Analysis
		386	AI-Driven Marine Pollution Detection for Coral Reef Conservation in Sri Lanka
		389	FITGEN – AI Smart Fitness Companion: An Integrated Multi-Modal Approach to Personalized Health and Fitness Management
	E.S5: Artificial Intelligence & Machine Learning	405	TALENT TREK: Enhancing Interview Decisions with Conversational AI
		408	Adaptive AI-Based Enhancement of Critical External Sounds in Insulated Vehicle Cabins for Improved Safety
		409	Human-AI Cooperative Driving through Emotion-Aware Decision Making and Driver Personalization
		428	Real-Time Optimization and Maintenance of Wind Turbine Performance Using Digital Twin Technology
		444	Harnessing Predictive Analytics to Decode USD/LKR Forex Dynamics Through Macroeconomic Signals
	E.S6: Artificial Intelligence & Machine Learning	300	*Deep Echo State Networks for Financial Time Series Forecasting in High-Volatility Markets*
		390	*Automated Netlist-to-Image Tool to Address Data Scarcity in Circuit Diagram Recognition*
		301	*Symbolic–Subsymbolic Synergy: Generative AI–Driven Multi-Scale ODE Simulation of Intracellular Signaling Pathways*
		343	*Comparative Evaluation of YOLO and RT-DETR Machine Learning Models for Coral Bleaching Detection*

Tea Break

Closing Ceremony	
4.00 pm – 4.05 pm	Opening Remarks
4.05 pm – 4.10 pm	ICAC 2025 Summary
4.10 pm – 4.20 pm	Speech by Prof. Nimal Rajapakse, Senior Deputy Vice - Chancellor & Provost, SLIIT, Sri Lanka
4.20 pm – 4.30 pm	MongoDB Educator Training Certificate Awards
4.30 pm – 4.40 pm	Technical Program Committee Summary - By Dr. Rukshan Athauda, University of Newcastle, Australia, TPC Chair of ICAC2025
4.40 pm – 4.55 pm	Best Paper Awards
4.55 pm – 5.00 pm	Closing Remarks

End of ICAC2025