

2025 5th International Conference on AI-ML-Systems (AIMLSystems 2025)

**Bangalore, India
8-11 October 2025**

IEEE Catalog Number:
ISBN:

CFP251BS-POD
979-8-3315-7319-5



Copyright © 2025, IEEE

All Rights Reserved

Copyright and Reprint Permissions:

Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number:	CFP251BS-POD
ISBN (Print-On-Demand):	979-8-3315-7319-5
ISBN (Online):	979-8-3315-7318-8

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA

Phone:	(845) 758-0400
Fax:	(845) 758-2633
E-mail:	curran@proceedings.com
Web:	www.proceedings.com

TABLE OF CONTENTS

Image Segmentation and Classification of E-Waste for Training Robots for Waste Segregation	1
<i>Prakriti Tripathi</i>	
Know What You Don't Know: Selective Prediction for Early Exit DNNs	4
<i>Divya Jyoti Bajpai, Manjesh Kumar Hanawal</i>	
Mixed 2D-3D Object Recognition for Autonomous Inspection in Industrial Environments	16
<i>Stefano Melacci, Giacomo Nunziati, Barbara Toniella Corradini, Giovanni De Magistris, Marta Fiorucci</i> <i>Guido Schillaci</i>	
Elevating LLMs Via Synergy of Quantum Computing and Classical Transformer Models	22
<i>Shashanka Shekhar Sharma, Ritisha Katiyar, Hrishikesh Sarma, Gayathri M</i>	
Quantum Machine Learning for Anomaly Detection in IoT Devices	28
<i>Sajid Ahmed Chowdhury, Shaikh Faiyaz Karim, Md. Shahriar Islam Bhuiyan, Ali Abir Shuvro</i> <i>Md. Sakawat Hossen</i>	
A Transformer-GNN Framework for Learning Full Output Distributions of Quantum Circuits	34
<i>Tourad Baba, Tianxiang Lu</i>	
Adaptive Quantum-Enhanced Learning: A Dynamic Hybrid Framework for Robust Quantum Machine Learning in the NISQ Era	40
<i>Kushagra Goyal, Avinash Pathak</i>	
Voice to Insight: STM32-Based Audio Logging with Offline AI-Driven Transcription, Translation, and Speaker Profiling	46
<i>Harshal M. Patil, Ashwini S. Shinde, Eshal M. Shaikh, Akshay Y. Dhere</i>	
ArchTune: A Predictive Energy Estimation Framework for LLM Inference on Edge Accelerators	52
<i>Arghyaajoy Mondal, Rajdeep Samanta, Ashwin Krishnan, Sparsh Mittal, Manoj Nambiar, Rekha Singhal</i>	
k-Sparse Audio Adversarial Attack: Budget-Constrained Audio Perturbations with Total Variation Regularization	62
<i>Arnav Singh, Soikat Das, Sparsh Mittal</i>	
LAMA-Net: Unsupervised Domain Adaptation via Latent Alignment and Manifold Learning for RUL Prediction	66
<i>Manu Joseph, Varchita Lalwani</i>	
FaEmNet: A Performance-Driven Architecture for Facial Emotion Recognition	77
<i>Sonali Gangwar, Sparsh Mittal</i>	
Agentic Summarization of Large Cobol Programs Beyond LLM Context Limits Using Call Graph-Based Grouping	87
<i>Sourav Bhattacharyya, Vasudev Chatterjee, William Alexander, Ranjan Kumar</i>	
Memoria: A Scalable Agentic Memory Framework for Personalized Conversational AI	90
<i>Samarth Sarin, Lovepreet Singh, Bhaskarjit Sarmah, Dhagash Mehta</i>	
A Pedagogical Approach for Evaluating AIOps	98
<i>Xinyang Chen, Yasith R. Wanigarathna, Arnab Chattopadhyay, Sasu Tarkoma, Ashwin Rao</i>	

DetectLLM: A Multimodal Fusion Approach for Detecting LLM-Generated Text	108
<i>Rajat Soni, Rajiv Misra, Supratik Mukopadhyay</i>	
A GAN-Based Data Integrity Attack on Wide-Area Damping Control Systems in the Smart Grid	116
<i>Smruti P Dash, Kedar V Khandeparkar, Gopal Gajjar</i>	
AutoRAG-LoRA: Hallucination-Triggered Knowledge Retuning via Lightweight Adapters	121
<i>Kaushik Dwivedi</i>	
RI-MAC: Optimising MAC Operation Using Custom RISC-V Instruction Set for Neural Network Inference	125
<i>Imlijunga Longchar, Kaustubh Khutal, Ashwath C. Reddy, Amey Varhade, Hemangee K. Kapoor</i>	
Multi-Resolution and Multi-Modal Temporal Graphs for Financial Forecasting	134
<i>Domenico Tupputi, Davide Bacciu</i>	
FUSE: Frequency Spatial Ensemble Attack with Dual Source Attention	142
<i>Rohit Singh Nitwal, Manav Aggarwal, Sparsh Mittal</i>	
An Efficient Lightweight U-Net Architecture for Retinal Layer Segmentation in OCT Images	147
<i>Akhil Lal P.P., Deepthi V.R., Sudeep P.V., Sreelekha G.</i>	
Bypassing the CPU: GPU-Centric Video Inference for Edge Offloaded Applications	156
<i>Prashanth Putcha, Hrushikesh Samnekar, Amit Doda, Abed Mohammad Kamaluddin, Satananda Burla, Praveen Tammana</i>	
ELM-Split: Energy-Latency-Memory Aware Splitting of DNN Models in Edge-Cloud Ecosystem	165
<i>Roopika Saxena, Ratul Kishore Saha, Rekha Singhal, Manoj Nambiar</i>	
IsoSignVid2Aud: Sign Language Video to Audio Conversion Without Text Intermediaries	174
<i>Harsh Kavediya, Vighnesh Nayak, Bheeshm Sharma, Balamurugan Palaniappan</i>	
Data-Driven Partitioning of Aggregate GPU Power Among GPU (MIG) Partitions	183
<i>Tirth Vamja, Kaustabha Ray, Felix George, Umamaheswari Devi</i>	
Multi-Granular Encoder-Decoder Architecture for Explainable Fact-Checking via Multi-Task Learning	192
<i>Mohit Nathani, Rajiv Misra, Supratik Mukhopadhyay</i>	
Hybrid Co-Optimization of Mobility and Energy Systems for Enterprise Operation	200
<i>Satyajit Behera, Prasant Misra, Vishnu Menon, Venkatesh Sarangan</i>	
NISMon: Identifying the Root Cause of NIC Rx Buffer Buildup	209
<i>Ankit Sharma, Ranjitha K, Abed Mohammad Kamaluddin, Satananda Burla, Praveen Tammana</i>	
QueRA: Query Synthesis and Resource Access Modelling in RAG	218
<i>Varun Kadkade, Mayank Mishra, Manoj Nambiar, Rekha Singhal</i>	
MAARV: Multi-Agent Architecture for Runtime Verification	227
<i>Ajitava Deb, Arush Jauhari, Mridangam Goswami, Usha G, N.A.S. Vinoth</i>	
Enhanced Feature Selection Using HCVR for IoT Datasets	234
<i>Nikita Bhedasgaonkar, Rushikesh K. Joshi</i>	
ZK-WAGON: Imperceptible Watermark for Image Generation Models using ZK-SNARKs	240
<i>Aadarsh Anantha Ramakrishnan, Shubham Agarwal, S Selvanayagam, Kunwar Singh</i>	

Detecting Damaged Road Signs with Limited Data and Targeted Augmentation	245
<i>Pankaj Singh Rathour, Rahul Kumar, Avinash Kushwaha, Abhinav Kumar, A.R.M. Forkan Prem Prakash Jayaraman</i>	
Cloud Architecture for Language Translation Model as a Service (MaaS) on Hugging Face	250
<i>Animesh Chaturvedi, Anubhav Gupta, Chintan Chawda, Rohit Chaudhari</i>	
Saarthi: Ensemble AI4Bharat IndicTrans2 and Gemini for Multilingual Indian Chatbot	254
<i>Abhishek Jain, Avinash Tiwari, Prince Kumar, Kartik Londhe, Sandeep Kumar, Animesh Chaturvedi</i>	
SocialSense: Mobile App With Evolution Analytics and Offensiveness Severity Detection	258
<i>Animesh Chaturvedi, Tanush Korgaokar, Mayank Kumar Shah, Aryan Kumar, Nikhil Baghel Akash Deep Sarkar</i>	
GenSenSim: Generative Sensor Response Simulator	265
<i>Anish Datta, Soma Bandyopadhyay, Subhasri Chatterjee, Tapas Chakravarty, Arpan Pal</i>	
i-LAVA: Insights on Low Latency Voice-2-Voice Architecture for Agents	268
<i>Aditya Choudhary, Anupam Purwar</i>	
BizEye: Broad-Spectrum Intelligent Zone Eye for Abnormality Detection	273
<i>Anupam Borthakur, Manoj Kumar Sharma, Debanjan Chattopadhyay, Kumar P Saha</i>	
Machine Learning-Enhanced EKF for Vehicle Localization Under Sparse Observations	276
<i>Adam Nabeel, Gopinath Selvaraj, Majeed Mohamed, Pappa M</i>	
PolicyBot: An Interactive Demo for Reliable Question Answering Over Policy Documents	279
<i>Gautam Nagarajan, Sudarsun Santhiappan, Omir Kumar</i>	
Ta Ka Di Mi: AI for Konnakkol and Rhythm Training	282
<i>Skanda Ananda Murthy, Balaji N K, Velivela Mohith Naga Sai</i>	
AI-Driven Data Governance: A Framework for Real-Time Observability, Data Quality, and Compliance	284
<i>Razak Abdul</i>	
Mind the Workflow: Unmasking the Super Agents of Today	287
<i>Sriram Sudhir H., Mohit Chawla, Zuhaib Z, Anupam Purwar</i>	
Scalable Inference Architectures for Operationalizing AI/ML in Enterprise Systems	294
<i>Srikanta Prasad S V, Utkarsh Arora, Sai Guruj, Nitin Surya, Ruchita Jadav, Raghav Tanaji</i>	
E-ARMOR: Edge Case Assessment and Review of Multilingual Optical Character Recognition	301
<i>Aryan Gupta, Sanskar Soni, J. Nuruddin, Shushant Kumar, Anupam Purwar, Ratnesh Jamidar</i>	
M-PACE: Mother Child Framework for Multimodal Compliance	311
<i>Shreyash Verma, Amit Kesari, Vinayak Trivedi, Anupam Purwar, Ratnesh Jamidar</i>	
Quora: Query Orchestration and Acceleration	320
<i>Ravi Kumar Singh, Shruti Kunde, Rekha Singhal, Manoj Nambiar</i>	
Faulty Junction Box Identification in Photovoltaic Manufacturing	327
<i>Anand Thirwani, Rahul Nair, Kedar Kulkarni</i>	
G-CSEA: A Graph-Based Conflict Set Extraction Algorithm for Identifying Infeasibility in Pseudo-Boolean Models	332
<i>Kanishk Garg, Saranya D., Sanalkumar K., Saurabh Singh, Anupam Purwar</i>	

Adaptive NOX Emissions Forecasting for Gas Turbines via Dynamic PCA-Driven Clustering	338
<i>Kamyar Zeinalipour, Laure Barriere, David Ghelardi, Marco Gori</i>	
VLMs-in-the-Wild: Bridging the Gap Between Academic Benchmarks and Enterprise Reality	347
<i>Srihari Bandraupalli, Mihir Gajera, Ali Asgar Saifee, Anupam Parwar</i>	
Machine Learning Based Ghi and Solar Power Forecasting Using Satellite-Based Spatio-Temporal Features	360
<i>Amol Patil, Kedar Kulkarni</i>	
OptiRAG: Optimized RAG Configuration Under Performance Constraints	366
<i>Archisman Bhowmick, Rekha Singhal</i>	
Med-Guard: LLM-Based Diagnostic System with Safety Guardrails	372
<i>Suparshva Jain, Kunwar Zaid, Amit Sangroya, Lovekesh Vig</i>	
Recommendation of Bundles of Ancillary Products: A Conceptual Architecture	381
<i>Aakash Swami, Narendhar Gugulothu, Sanjay Bhat</i>	
MCX-Net: A Class-Specific Expert Decoder Network for Multi-Class Defect Segmentation in Photovoltaic Cells	387
<i>Anto Nigin, Kedar Kulkarni</i>	
Prescriptive Agents Based on RAG for Automated Maintenance (PARAM)	393
<i>Chitranshu Harbola, Anupam Purwar</i>	
Automated Asset Onboarding: Synergistic Integration of Specialized Computer Vision and Large Language Models for Automated Asset Information Extraction	401
<i>Mukka Sai Manikanta, Kavyaneel Vats, Abhishek Mishra, Himanshu Pant, Sateesh Panda</i>	
RAFTAR-FM: Retrieval-Augmented, Feedback-Tuned Agentic Resolution for Facilities Maintenance	410
<i>Abhijeet Pandey, Himanshu Pant, Rishav Ranaut</i>	
Estimating Rooftop Solar Energy Potential Using Image Segmentation	417
<i>Anto Nigin, Anand Thirwani, Amol Patil, Kedar Kulkarni</i>	
Performance and Cost Benefits of Workload-Aware Heterogeneous Deployment in Modern Applications	422
<i>Ashwin Krishnan, Samarth Inamdar, Yash Nagda, Venkatesh Pasumarti, Manoj Nambiar, Rekha Singhal</i>	
Evolving Quantum Feature Maps with Hierarchical Genetic Algorithms for Robust Indoor Localization	429
<i>Devendra Nath Tripathi, Neel Kanth Kundu, Abhishek Dixit</i>	
CoQS-LSTM: A Coherent Quantum LSTM	435
<i>Davinder Singh, Ushnik Nath, Anubha Gupta, Debajyoti Bera</i>	
Experimental Validation of Dequantization of Hybrid Quantum Machine Learning Models Using Classical Surrogates	441
<i>Sparsh Mittal, Mintu Kumar, Yash Chand, Rajiv Krishnakumar, Neel Kanth Kundu</i>	
Benchmarking the Quantum Frontier: Evaluating QML Models on Core Learning Tasks	447
<i>Samarth P, Sadhana Shashidhar, Sakshi Rajani, Sakshi Masand, Prema Ramasamy</i>	
Amplifying Block Encoded Quantum Operations with Grover Iterations	453
<i>Nishitha Reddy Venkannagari, Varun Puram, Johnson P Thomas</i>	

Optical Modeling and Simulation of the Fluorescence Emission and Detection in Diamond Magnetometry	458
<i>Ritvik Raina, Prabhat Anand, Sourav Chatterjee</i>	
Quantum Machine Learning Models for Enhanced Weather Prediction	463
<i>Abhishek Tiwari, Sachin Kumar, Pankaj Tyagi, Shivanshu Siyanwal, Saiyam Sakhuja</i>	
Toward Quantum Enabled Solutions for Real-Time Currency Arbitrage in Financial Markets	469
<i>Suman Kumar Roy, Rahul Rana, M Girish Chandra, Nishant Kumar, Manoj Nambiar</i>	
Neuromorphic Approaches for Energy Efficient Object Localization	475
<i>Debarati Paul, Sayan Pradhan</i>	
Cost-Aware Fine-Tuning: Evaluating Hyperparameters, Datasets and PEFT Methods for Efficient LLM Adaptation	481
<i>Aditya Chatterjee, Sankar Menon, Rupesh Yarlaagadda, Kunal Korgaonkar</i>	
Directed Network Modeling with Generative AI for Driver Decision Support	486
<i>Yogesh Dhumal, Jaswanth N</i>	