

2025 IEEE International Conference on Computer Vision and Machine Intelligence (CVMI 2025)

**Rourkela, India
12-13 October 2025**

IEEE Catalog Number: CFP25SZ2-POD
ISBN: 979-8-3315-9603-3



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:	CFP25SZ2-POD
ISBN (Print-On-Demand):	979-8-3315-9603-3
ISBN (Online):	979-8-3315-9602-6

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

Distilling Intelligence: Deploying Lightweight Neural Networks on ESP32 for Edge AI	1
<i>Mahesh. R, J. Preetha, Ajay Surya B, Thamizharasan P</i>	
A Comparative Study of UNet and its Variants for Breast Cancer Tumor Segmentation	7
<i>Darshan Dathiya, Ajit Kumar, Narayana Darapaneni</i>	
PSF-Aware Image Deblurring with CBAM-Infused Deep Residual Networks	13
<i>Suhani Jain A, Kapilesh D A, Premanand V, Rajarajeswari S</i>	
Classification of Real and AI-Generated Faces for Deception Detection	19
<i>Anil Kumar D, Raj Ganesh B, Sathwik K, J K S Kowshik, Lavanya R</i>	
Low-Cost IoT and TinyML for Offline Early Chronic Disease Risk Identification in African Communities	25
<i>Kayongo Johnson Brian, Marvin Ogore</i>	
FRCL: A Robust Framework for Continuous Learning and Identity Retention in Face Recognition	31
<i>Pratul Kumar, Anurag Tiwari, Suvadeep Das, Ashish Tyagi, Ajay Kumar, Shikha Srivastava</i>	
Improved Anomalous Activity Detection Using Efficient Pre-Processing and ConvLSTM	37
<i>Parikshit Saikia</i>	
Comparative Study of Object Tracking Algorithms for Urban Intersection Risk Analysis Using CSRT, FairMOT, DeepSORT, and ByteTrack	43
<i>M Muralidharan, Yazhiniyan Tamizhnambi, Advik Chakravarthy Arun, Premanand V</i>	
AI-Powered Diagnosis of Voice Disorders Using Mel-Frequency Feature and Machine Learning	50
<i>Anshu Mala Kispotta, Rupesh Kumar Sinha, Sitanshu Sekhar Sahu</i>	
Hyperparameter Tuning of Convolutional Neural Networks Using Lion Optimization Algorithm	56
<i>Swagatika Mohapatra, Partha Pratim Sarangi, Bhabani Shankar Prasad Mishra, Madhumita Panda Siddharth Singh, Aiman Hasib</i>	
Neural Radiance Fields, Gaussian Splatting and its Applications in Underwater Archaeology	62
<i>Jasjappan Singh, Pramod Maurya, AS Gaur, Gaurang Tari, Pratibha Bachhley, Fabian Savio de Sa Harsh Raj, A. Yogesh</i>	
Facial-Based BMI Estimation for Digital Health Monitoring Using MediaPipe and Meta-Ensemble Learning	69
<i>Lakshmi Priya R V, Aishwarya N, Satvik Aryan, Umarani Jayaraman</i>	
Static Sign Language Recognition via Fusion of Domain-Specific Features and Hybrid Ensemble Learning	75
<i>Sukanya Das, Debasis Samanta, Monalisa Sarma</i>	
EMD Based Hybrid Machine Learning Framework for Solar Energy Forecasting	81
<i>Ravi Monika Sai, Prajnyajit Mohanty, Umesh C. Pati</i>	
BrainResMambaVision-18 an Transformative Approach for Enhanced Multi-Class Classification	87
<i>Pranshu Jena, Umesh C. Pati</i>	

From Images to Insights: A Scientometric Study of Image Captioning Research from 2021 to 2025	93
<i>Marvi Jasrotia, Himanshu Sharma, Ashwani Kumar</i>	
Enhancing Spatial Reasoning in Vision-Language Models via Monocular Depth Estimation: A Comparative Study on SpatialBench	99
<i>Karthik Prasad G, Murali Krishna Panthangi</i>	
Enhanced Deep Learning Framework for Alzheimer's Detection Using Attention Mechanism: A Hybrid CNN Approach	104
<i>Amrutha Dilip Kumar, Ponuku Sarah, Moulika AK, Gunavathi C</i>	
Dak Madad: AI-Powered Platform for Enhancing Postal Operations and Delivery Efficiency	110
<i>Nisha Rathi, Tilak Neema, Shriyash Beohar, Shubhang Chakrawarty, Vinamra Hetawal, Rewa Takzare</i>	
OPTIMISED DVERGE: Disrupting Adversarial Transferability in Black-Box Attacks	116
<i>Pratham Bhatia, Ishaan Oberoi, Rohan Kumar Behera, Mehak Gupta, Pranjal Kumar Singh, Anchal Singh Krishna Pratap Singh</i>	
Decentralized Fuzzy Logic Formation Control for Multi-Rotor Swarm with Virtual Leader	121
<i>Jiljo K Moncy, Dinesh Kumar M</i>	
GLoHi-Cap: Gated Multimodal Fusion with Spatial Object Localization for Hindi Image Captioning	127
<i>Himanshu Sharma, Devanand Padha, Yashwant Singh</i>	
Early Student Dropout Prediction Using GRU-RNN	133
<i>G Sravya Sree, D Naga Lahari, P Bhavana Gowri, Bhumi Reddy Murla, B N BalaRami Reddy</i>	
Uncertainty-Aware Brain Tumor Segmentation	139
<i>Rahul Pal, Sanoj Kumar, Gaurav Bhatnagar</i>	
HUFT-Net: Multi-Modal Approaches for Automated Diagnosis of Respiratory Diseases Using Respiratory Sounds	145
<i>Bhavya Harini Rudra, Panigrahi Srikanth, Khyathi Sri Nagaveni Kadali</i>	
A Hybrid Hierarchical Approach for Long Document Topic Representation	151
<i>Amruth Karun M V, Selvi C</i>	
A Hybrid Deep Learning and Voxel-Based Morphometry Framework for Structural MRI-Based Autism Spectrum Disorder Classification	157
<i>Mahaboob Khan Pathan, M Sucharitha</i>	
E-Commerce Enhancement Through Intelligent Customer Interaction: Integration of GPT-Powered Chatbot with Sentiment Analysis	163
<i>Abhigyan Roy, Supratick Mandal, Baidurya Debnath, Rohini Basak, Pawan Kumar Singh</i>	
GPU-Enhanced Lung CT Segmentation via Chan-Vese Model and Multi-Scale Texture Analysis	169
<i>Ritik Kumar Pandey, K. V. Sridhar, Vikas Kumar Tiwari</i>	
Multimodal Framework for Explainable Brain Tumor Classification: Integrating Deep Learning and Large Language Models	175
<i>Deepika Vatsa, Adhyay Bansal, Hardik Agarwal, Aryan Dhaka</i>	
Improving Security of LSB Image Steganography for Pixel Locator Sequence Using Cryptographic Techniques with AES	181
<i>Satyam Kumar, Swapan Maiti</i>	

Comparative Analysis of Transformer Models for Skin Lesion Detection	187
<i>Isha Bamel, Purav Ahya, Rupali Sawant</i>	
Bringing Llama-3 to the Edge: End-to-End Quantized Conversational AI on Raspberry Pi 5	193
<i>Saarang Arora, Kishor Kumar Kachari, Suyash Gupta, Parth Saarthi, Arpit Kumar Yadav</i>	
<i>Salur Srikant Patnaik</i>	
A Vision Transformer Based Framework for Scalable and Interpretable Glioma Histopathology Classification	198
<i>Sagar Kumar Jha, Madhavi Mathur, Afza Akbar, Jyotsna Singh, Abhishek Rana, Vaishali Suri</i>	
<i>Tavpritesh Sethi</i>	
Depression Detection Using Machine Learning	203
Machine Learning Inspired Impedance Matching Prediction of Fractal Gasket Antenna	208
<i>Chamundeswari K, Avula Uttej Kumar, Sandip Ghosal</i>	
FairVitDMD: Fairness Assessment of Foundational Vision Transformers for Deep Manipulation Detection	213
<i>Anirudha Ghosh, Debaditya Barman, Abu Sufian, Megha Mandal, Cosimo Distanto, Marco Leo</i>	
Encoder-Decoder Refined Recurrent Transformer Network for Accelerated MRI Reconstruction	219
<i>Susant Kumar Panigrahi, Pradipta Sasmal, Dipayan Dewan, Debdoot Sheet</i>	
A Compact Transformer Based Approach for Alzheimer's Disease Diagnosis	225
<i>Anshita Verma, Akshant Verma, Ram Prakash Sharma</i>	
Enhancing Low-Light Images Using Retinex with Adaptive Gamma and Dark Region Denoising	231
<i>Deepika Gupta, Naveen, Srujal Deepak Pawar</i>	
Benchmarking Improved Metaphor-Less Optimization Algorithms on Traveling Salesman Problem	237
<i>Arun Bhattacharya, Dastageer Siddiqui, Partha Pratim Sarangi</i>	
RegUNeXt with Hybrid Attention for Advanced Segmentation for Tumorous Region in Brain Tumor	243
<i>Rambariki Pavan Kumar, Pranshu Jena, Umesh C. Pati</i>	
Physics-Informed Sparse Seismic Inversion with Wedgelet-TGV and Hybrid ADMM-ALM-AFISTA Algorithm	249
<i>Supriyo Chakraborty, Nikhil Pandey, Sanjay Bhargav Dharavath, Aurobinda Routray</i>	
Performance Comparison of Real-Time Image Dehazing Using AOD-Net on NVIDIA Jetson Edge Devices	255
<i>Naresh Malothu, SaiKiran Sanjay Mirthipati, Ravi Kumar Jatoth</i>	
Furnit.Ar: AI-Powered Augmented Reality Interior Designing Application	260
<i>Shantanu Dhar, Saurav Haldar, Shlok Pete, Roushan Jha, Vinaya Sawant, Sharvari Patil, Neha Agarwal</i>	
A Study of Fairness and Bias of Deep Learning Models	268
<i>Keshav Lohani, Tirlok Meena, Darshan Vanjara, Goransh Barde, Aman Raj, Shashank Rawat</i>	
<i>Garima Chaubey, Brijesh Kumar, Krishna Pratap Singh</i>	
Data Poisoning Attacks and Defenses in Machine Learning: A Survey with Focus on Computer Vision	275
<i>Bassam Nazer, Poornima Savadattimath, Sushma Kumari</i>	

Efficient Climate Prediction Using Parallel Gaussian Process with Random Fourier Feature-Based Kernel Approximation	281
<i>Hemant Singh, Tamba Saketh, Vishwanth, Surabhi Pranav, Mohammad Shahnawaz, Manish Kumar</i>	
Dipping Metrology: A Voxel-Based Reconstruction Framework for Arbitrary 3D Objects	287
<i>Yash Sanjay Sawant, Abhijith Acharya, K. P. Karunakaran</i>	
Real- Time Sign Language Recognition with CNN - Transformer Model	292
<i>Reethu Thota, Shreyas Rajiv, Avanthi Narasingu</i>	
A Multi-Descriptor Framework for Image-Based Genotype Classification in Plants	299
<i>Prasenjit Betal, Pabitra Mitra, Chittaranjan Mandal, Arindam Dasgupta</i>	
Enhancing Model Efficiency with Random Projections: Applications in Deep Learning	305
<i>Md Shahzeb, Preethi M, Sushma Kumari</i>	
Evaluating CNNs and Vision Transformers for Brain Tumor Detection: A Trade-Off Between Performance and Computation	311
<i>Tameshwari Bande, Ankit Yadav, Dinesh Kumar Vishwakarma</i>	
EnhanceNet: Leveraging Facial, Speech, and Textual Cues for Multimodal Emotion Recognition	318
<i>Prachuit Priyadarshi Sahoo, Dipti Patra</i>	
Privacy-Preserving Federated Learning for Health Care Data	324
<i>Navya Nelakuditi, BhavanaSree Vemuri, Sravyasree Samhitha Katupalli, Navya Kandula Uma Sankararao Varri</i>	
Real-Time Postures Detection and Monitoring at Workplaces Using Pose Estimation	330
<i>Vijay Gaikwad, Harshad Sheelwant, Bhavesh Shelke, Shashank Patil, Yashraj Shinde, Abdul Sheikh</i>	
FedCF: A Federated Collaborative Filtering Framework for Decentralized Movie Recommendations	337
<i>V Sai Nithish, M Shiva Kiran Reddy, M Nikhil Reddy, T Naga Abhiram, Uma Sankararao Varri, Vinay Raj</i>	
Signature Recognition and Forgery Detection Using Image Processing Techniques	343
<i>Ayush Kumar Poddar, Achyuth Kasyap P, Atul Mayank, Adarsh Srinivas Prabhu, G. Dinesh Krishan</i>	