ABHINESWARI M

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EDUCATION

Vellore Institute of Technology (VIT) *July 2026 (expected)*
Integrated MTech. in Computer Science and Engineering with specialization in Business Analytics
CGPA: 8.39/10.0
Related courses: Information Visualization, Computer Vision, Image and Video Analytics, Machine Learning

CSI Ewart Girls Higher Secondary School *May 2021*

Higher Secondary Examination	89/100
Secondary School Leaving Certificate (SSLC) Examination	89/100

RESEARCH POSITION

Project Research Intern at Computational Imaging Lab, IIT Madras *June 2025 - Present*
Supervisor: Dr. Kaushik Mithra

Student Summer Research Intern at VIT Chennai *Summer 2024*
Supervisor: Dr. Anitha Christaline J

RESEARCH EXPERIENCE

Progressive Distortion Aware 4DGS Scene Reconstruction from Distorted Monocular Videos using RGB + Events June 2025 - Present
Supervisors: Dr. Kaushik Mithra and Dr. Saranyaraj D IIT Madras, VIT

- Reconstructing photorealistic, sharp, and temporally consistent 4D dynamic scenes from casually captured monocular videos afflicted by distortions (Dynamic lighting / Motion Blur/ Parallax effects)
- Aims to improve existing deblur splatting methods involving the above distortions using multi-modality inputs.

Unsupervised Panoptic Segmentation for 2D Indoor Scenes May 2024 - Dec 2024
Supervisors: Dr. Saranyaraj D and Prof. Anitha Christaline J VIT

- Developed a single model framework **'UNICORSO: Unsupervised Network for Image Clustering, Object Recognition, and Segmentation Optimization'** outperforming prior models such as DINO, STEGO, U2Seg, and DynaSeg and is currently under publication.
- The objective was to examine the literature and generate ideas to develop a reliable model for object segmentation in crowded indoor environments.
- The framework showed remarkable improvements with a Pixel Accuracy of 78.7 and a mean Intersection over Union (mIoU) of 35.7, outperforming prior models such as DINO, Picie+h, STEGO, and U2Seg by significant margins (+14.8 PixelAcc, +5.5 mIoU).

Vision to Reality: Single-Image 3D Object Reconstruction with Augmented Reality. Jan 2024 - May 2024
Supervisors: Dr. Sivabalakrishnan M VIT

- Developed a model capable of generating accurate 3D model objects from a single 2D image, enabling precise reconstruction and seamless integration within real world environments through augmented reality technology.
- Utilized Blender and Spark AR for real time object placement with TripoSR + SF3D for 3D single image object reconstruction.
- Explored on the common problems of 2D to 3D reconstruction being Depth Information, Occlusions, Texture and Lighting for single-shot, Noise and Viewpoint dependencies during capture.

- Demonstrated the refinement of the overall Spark AR projection integration framework using patches for real-time placement alignment and rotation

Automated Human Action Recognition using Motion History Mask-based Convolutional Neural Network [1] June 2023 - April 2024
Supervisors: Dr. Kaja Mohideen A VIT

- The challenge being addressed involves reducing the computational complexity by recognizing frames using masks rather than regions.
- Evaluated the MHM-CNN's effectiveness across several publicly available benchmark datasets, including UCF101, UCF50, KTH, and HMDB51, adhering to standard protocols to ensure air comparisons.
- Demonstrated that MHM-CNN consistently outperforms existing models, achieving top accuracies of 98
- Our Findings underscore the potential of MHM-CNN as a more efficient and accurate solution for complex action recognition tasks.

Deep Fake Detection using Transfer Learning: A Comparative study of Multiple Neural Networks. [2] [3] Winter 2024
Supervisors: Dr. Sujithra Kanmani R VIT

- Collaborated with two other graduate students as we aimed to enhance deep fake detection through the use of transfer learning and deep learning approaches
- Perfomed an effective comparative study along with the added exploration of deep fake generation using generial adverserial networks GAN's
- Extracted, explored, and processed 10GB of related data
- Overall suggestion is that while deeper and more complex models may offer advantages in other tasks, they might not necessarily translate to improved performance in deep fake detection. Therefore pre-trained models are much recommended without the model overfitting
- Concluded that transfer learning was much efficient compared to models requiring more data and training time.

PUBLICATIONS

[1] M. **Abhineswari**, K. S. Charan, S. BN, and S. Kanmani R, "Deep fake detection using transfer learning: A comparative study of multiple neural networks," in *2024 International Conference on Signal Processing, Computation, Electronics, Power and Telecommunication (IConSCEPT)*, 2024, pp. 1–6. DOI: 10.1109/IConSCEPT61884.2024.10627869.

[2] A. Mohideen and M. **Abhineswari**, "Automated human action recognition using motion history mask-based convolutional neural network," Oct. 2025, pp. 317–327, ISBN: 978-981-96-8900-2. DOI: 10.1007/978-981-96-8901-9_28.

[3] M. **Abhineswari** and R. Priyadarshini, "Analyzing large-scale twitter real time streaming data with manifold machine learning algorithms in apache spark," in *2023 International Conference on Data Science, Agents & Artificial Intelligence (ICDSAAI)*, 2023, pp. 1–9. DOI: 10.1109/ICDSAAI59313.2023.10452549.

RELEVANT COURSES

Mathematics : Mathematics for Engineers, Probability and Statistics for Engineers, Linear Algebra and Transformation Techniques, Optimization Techniques, Accounting and Econometrics

Machine Learning : Artificial Intelligence and Knowledge Based Systems, Big Data Frameworks, Machine Learning, Computer Vision, Natural Language Processing, Image and Video Analytics, Real-Time Analytics

SKILLS

Programming Languages	Python, R, C, C++, Latex
Library Frameworks	Pytorch, Tensorflow, OpenCV, Sklearn, Pandas, Numpy, etc
3D Vision Graphic Frameworks	Open3D, PyTorch3D, COLMAP, GSplat, Nerfstudio
Bussiness Analytics	Excel, SPSS, Tableau, PowerBI, Eviews, Orange