

# PRAHLAD ANAND

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## EDUCATION

**Johns Hopkins University, Baltimore, MD**

*Master of Science in Engineering, Computer Science*

**2024 – 2026 (Expected)**

GPA: 3.85/4

**Vellore Institute of Technology, Vellore, India**

*Bachelor of Technology, Computer Science and Engineering*

**2020 – 2024**

GPA: 8.86/10

## EXPERIENCE

**Image Analysis and Communications Lab, Johns Hopkins University**

**Graduate Research Assistant, *Deep Learning and Medical Imaging***

**Aug 2024 – Present**

- Developed an explainable AI framework extending GradCAM for general-purpose CNNs, improving interpretability of brain MRI harmonization failures in encoder-decoder networks.
- Created a novel iterative adversarial attack strategy for CNN feature encoders. Evaluated the extent of disentanglement and improved encoder performance at test time using feature perturbation.

**AI and Robotics Lab, Indian Institute of Science, Bangalore, India**

**Research Intern, *Deep Learning and Computer Vision***

**Jan 2024 – Jun 2024**

- Developed a semi-supervised RGB-to-IR image translation model, enhancing autonomous vehicle perception in low-light environments by 3% over other state-of-the-art image generation models also using transfer learning.
- Achieved a +8.3% performance improvement over SOTA segmentation (DeepLabv3+) and detection (YOLO, Mask RCNN, Faster RCNN) models with zero-shot synthesis for GTAV and CARLA simulation environments, demonstrating real-to-sim domain adaptation. Researched multi-modal Large Language Models for the same task.

**Research Intern, *Deep Learning and Computer Vision***

**May 2023 – Jul 2023**

- Enhanced the accuracy of object detection and semantic segmentation networks by 7% on multimodal RGB-IR datasets through sensor fusion and data augmentation using generative image translation models (GANs, diffusion).
- Improved accuracy using supervised IR image synthesis by 5.2% and by a further 5% using super-resolution.

**ML Research Intern**

**May 2022 – Jul 2022**

- Leveraged data augmentation, sampling, hyperparameter tuning, experimenting with loss functions and complex-valued neural networks to improve multi-modal aerial image classification by 7.5% across CNN models.

## PUBLICATIONS

- **Anand, P.,** Saadiyeen, Q., Sikdar, A., N., Nalini, Sundaram, S. (2024). *Supervised Image translation from Visible to Infrared Domain for Object Detection*. **arXiv**.
- Sikdar, A., Saadiyeen, Q., **Anand, P.,** Sundaram, S. (2024). *SSL-RGB2IR: Semi-supervised RGB-to-IR Image-to-Image Translation for Enhancing Vision Task Training in Semantic Segmentation and Object Detection*. **IROS**.

## SKILLS

**Programming** - Python, Java, JavaScript, SQL, C/C++, PHP, HTML, CSS

**Technologies** - PyTorch, TensorFlow, Keras, Scikit-learn, NLTK, MySQL, Linux, Git, Tableau, PowerBI, Agile

**Skills** - Machine Learning, Computer Vision, Data Science, Natural Language Processing, Generative AI

## PROJECTS

**Product Recommendation System** - [Link](#)

- Developed a recommendation system pipeline to web scrape Amazon in real time using Selenium and suggest products based on similarity in images, brand, and specifications.
- Utilized a CNN for image feature extraction and a token count vectorizer to compute cosine similarity.

**Electroencephalogram (EEG) Data Classification** - [Link](#)

- Enhanced multiple CNN architectures for EEG classification by incorporating dropout and RNN units. Reconstructed EEG images from 1D signals, achieving 97.5% accuracy in detecting abnormal pathology.

**Email Phishing Detection using TF-IDF** - [Link](#)

- Evaluated pruned/boosted decision trees, kNN, and polynomial/linear kernel SVMs (99.8% classification accuracy).

**Library Management and Book Recommendation System** - [Link](#)

- Developed a library management website with integrated collaborative filtering-based book recommendation.

**Intrusion Detection using Multi-Model Decision Trees** - [Link](#)

- Implemented a Mixture-of-Experts model for network security logs using RFE for decision trees (99.7% accuracy).