PRAHLAD ANAND

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EDUCATION

Johns Hopkins University, Baltimore, MD   **2024 – 2026 (Expected)**
Master of Science in Engineering, Computer Science   GPA: 3.85/4
Vellore Institute of Technology, Vellore, India   **2020 – 2024**
Bachelor of Technology, Computer Science and Engineering   GPA: 8.86/10

EXPERIENCE

Image Analysis and Communications Lab, Johns Hopkins University
Research Assistant*, Deep Learning and Medical Imaging*   **08/24 – Present**
- Developed an explainable AI framework extending GradCAM for general-purpose CNNs, improving interpretability of brain MRI harmonization failures in encoder-decoder networks.
- Developed 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*   **01/24 – 06/24**
- 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 translation 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.

Research Intern, *Deep Learning and Computer Vision*   **05/23 – 07/23**
- 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 translation by 5.2% and by a further 5% using super-resolution.

Research Intern, *Machine Learning*   **05/22 – 07/22**
- Leveraged data augmentation, sampling, 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.,** Saadiyean, Q., Sikdar, A., N., Nalini, Sundaram, S. (2024). *Supervised Image translation from Visible to Infrared Domain for Object Detection.* **arXiv.**
- Sikdar, A., Saadiyean, 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, Scikit-Learn, Pandas, MySQL, Selenium, Git, PowerBI, Tableau, Agile
Skills - ML, Computer Vision, Medical Imaging, NLP, Data Science, Generative AI, Foundation Models

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).