Mahendra Nath Reddy E

Hatfield, UK ◆ ml.mahendranath@gmail.com ◆ Linked In ◆ Github

Personal Statement

MSc graduate in AI & Robotics with a specialisation in medical image analysis and computer vision. Expertise in designing, training, and evaluating deep learning models for complex applications. Seeking a full-time Machine Learning internship role, **with immediate availability and eligibility for the 2-year Graduate Route visa.**

Research Interests: Applied Machine Learning | Computer Vision & Medical Imaging | Generative Models (GANs)

Experience

External Research Collaborator
SPRITZ Security & Privacy Research Group – University of Padova, Italy · Jan 2024 – Jun 2024

- Contributed to the development of a novel game-based CAPTCHA solution to improve user interaction and integrate real-time bidding (RTB) for monetisation.

Skills

Languages: Python, C++, Java | **Libraries:** PyTorch, TensorFlow, Scikit-learn, OpenCV, NumPy, Pandas | **Tools:** Git, Docker, ROS2, Jupyter

Education

Master of Science : Artificial Intelligence & Robotics | University of Hertfordshire, UK | Sep 2023 – Sep 2025

Bachelor of Technology : Computer Science & Engineering | REVA University, India | Aug 2018 – Jun 2022

Selected Projects

Domain Generalization in Computational Histopathology (Current Work)

- Designing a reproducible experiment by implementing state-of-the-art deep learning model (HoVer-Net/U-Net) using PyTorch and Docker to train a specialist model on the CoNSeP dataset and test model's generalisation on the unseen MoNuSeg dataset.
- Quantifying performance degradation using Panoptic Quality (PQ) and F1-score to provide a clear benchmark of the domain gap for building robust clinical AI.
- **Tech Stack:** PyTorch, Docker, MONAI, OpenCV, Scikit-learn, Git.

Generative Adversarial Networks for EEG Signal Synthesis (MSc Thesis)

- Systematically evaluated GAN architectures (DCGAN, WGAN-GP, Dual Gan, Vanilla Gan.) to synthesize realistic EEG signals, addressing data scarcity in neuro-physiological research.
- Validated the final WGAN-GP model against real-world signals, achieving a **Pearson Correlation of >0.9** and out performing the baseline Vanilla GAN **by 33%** across a comprehensive suite of metrics Pearson Correlation and KL Divergence.
- **Tech Stack:** PyTorch, WGAN-GP, NumPy, Pandas, Scipy, Matplotlib.

Unsupervised Clustering for Tumor Phenotyping (Awarded 2nd Prize)

- Implemented and compared Unsupervised Clustering Algorithms at different levels (superpixel, pixel-level, and stain-specific) for nuclei segmentation in H&E images from the MoNuSeg dataset.
- Demonstrated the superior performance of clustering on the isolated Hematoxylin channel, providing a scalable, annotation-free alternative to supervised techniques.
- **Tech Stack:** Scikit-learn, OpenCV, Clustering (K-Means, GMM, FCM), Matplotlib.

Activities

- **Team Member (UH Racing Autonomous), FS - AI Competition** | Silverstone, UK | *July 2025*
  - *Aided with ROS2 stack debugging and presented the team's technical architecture.*
- **Selected Participant & Grant Recipient, BMW Summer School** | Chiemsee, Germany | *July 2024*
  - *Presented a research poster on gesture-based vehicle control.*