# Harishwar Reddy K

3800 SW 34TH ST, Gainesville
Florida, USA , 32608

in www.linkedin.com/in/khreddy
✉ harishwarreddy.k@ufl.edu

## Research Interests

Foundation Models, Self Supervised learning, Explainable AI, Digital Pathology.

## Education

**University of Florida** — Aug 2023 –
*Ph.D. in Electrical and Computer Engineering, CGPA: 4/4* — *Gainesville, Florida, USA*

**Indian Institute of Science (IISc)** — Oct 2020 – June 2022
*M.Tech in Artificial Intelligence, CGPA: 8.2/10* — *Bangalore, Karnataka, India*

**University College of Engineering, Osmania Univeristy** — Aug 2015 – May 2019
*B.E in Electrical and Electronics Engineering, CGPA: 8.39/10* — *Hyderabad, Telangana, India*

## Research Experience

**Graduate Research Assistant** — Aug 2023 – Present
*University of Florida* — *Gainesville, FL, USA*

- Digital Pathology, Self Supervised learning (SSL), Classification, Segmentation, and Cell Detection.

- Trained a Multiple Instance Learning (MIL) model using the embeddings obtained from SSL model for drug treatment response prediction in Lupus Nephritis patients

- Rigorous benchmarking of the SOTA histopathology foundation models for kidney specific histopathology tasks

- Trained a SSL model for kidney specific histoapathology on  30,000 WSIs

- Improving the explainability of histopathology foundation models, namely, UNI and Prov-Gigapath.

- Trained a glomeruli tuft segmentation model using only 400 glomeruli through Deeplabv3+ architecture

- Implemented Cell ViT for doing immune cell detection in PAS stained whole slide images (WSIs) for Lupus Nephritis patients.

**Junior Research Fellow** — July 2022 – March 2023
*Indian Institute of Science* — *Bangalore, India*

- Image Classification, Image Enhancement, and Visual Explanation of convolutional neural networks.

- Implemented Layer-CAM, Eigen-CAM, and HiResCAM on the Inception-ResNet-v2 architecture to classify abnormalities in Optical Coherence Tomography (OCT) data.

- Authored and submitted research papers to reputable conferences, including NeurIPS and ISBI.

**Research Intern** — April 2023 – July 2023
*Siemens* — *Bangalore, India*

- Explainable Active Learning (XAL), Deep Learning, MLflow, and Prefect.

- Fine-tuned models to classify Bags, Backpacks, and Suitcases in the Siemens logistics dataset.

- Developed an explainable active learning pipeline for the baggage dataset.

## Publications

- **Harishwar Reddy Kasireddy**, Nicholas Lucarelli, Donghwan Yun, Kyung Chul Moon, John E. Tomaszewski, Seung Seok Han, Benjamin Shickel, Ahmed Naglah, Pinaki Sarder, "Explainable Feature Embeddings from Histopathology Foundation Models: A Case Study for End Stage Kidney Disease Risk Analysis in Diabetic Nephropathy Patients", In *Proceedings of the Medical Imaging 2025: Digital and Computational Pathology*

- Nouar AlDahoul, Myles Joshua Toledo Tan, **Harishwar Reddy Kasireddy**, Yasir Zaki , "Exploring Vision Language Models for Facial Attribute Recognition: Emotion, Race, Gender, and Age ", Submitted to *Engineering Applications of Artificial Intelligence*

- **Harishwar Reddy Kasireddy**, Udaykanth Reddy Kallam, Siddhartha M S K, Hemanth Kongara, Anshul Shivhare, Jayesh Saita, Sharanya Vijay, Raghu Prasad, Rajiv Raman, Chandra Sekhar Seelamantula, "Deep Learning Based Visualization and Volumetric Analysis of Fluid Regions in OCT Scans", In *Diagnostics 13, no. 16 (2023): 2659*

- **Harishwar Reddy K**, Anshul Shivhare, Hemanth Kongara, Jayesh Saita, Raghu Prasad, Chandra Sekhar Seelamantula, "Denoising Enhances Visualization of Optical Coherence Tomography Images", In *Proceedings of the Sixth NeurIPS workshop on Medical Imaging (Med-NeurIPS), 2022.*

## Selected Projects

### Development of DNN Architectures for OCT Image Classification and Indicative Visualization
*In collaboration with Carl Zeiss Meditec AG, Bangalore*                    *Aug 2021 – June 2022*

- The retinal OCT data are used for the diagnosis of multiple retinal pathologies such as Intraretinal Fluid (IRF), Subretinal Fluid (SRF), and Pigmented Epithelial Detachment (PED). Modeled the noise present in the images using the noise only scans (scans obtained without specimen).

- Performed image enhancement using Denoising Convolutional Neural Network (DnCNN), DnCNN with skip connections, and Gated Convolutional and Deconvolutional Structure.

- Classified the images into IRF, SRF, and PED pathologies using Inception-ResNet-v2 .

- Visualized the diseases in OCT images using Grad-CAM, Grad-CAM++, Score-CAM, Self-Matching CAM, and Ablation-CAM.

- Developed two new class activation mapping based techniques which increase the confidence of the users over the model.

## Skills

**Coursework**: Computational Linear Algebra, Information theory for Data Science and Machine Learning, Stochastic methods for Engineering, Introduction to Biomedical Image Analysis, Computer Vision, Data Structures and Algorithms, Pattern Recognition and Neural Networks, Computational Methods of Optimization, Stochastic Models and Applications, Advanced Image processing, Digital Video Perceptions and Algorithms, Optimization for Machine Learning and Data Science.

**Technical Skills**: Python, TensorFlow, Pytorch, OpenCV, NumPy, Pandas, Scikit-image, Scikit-learn, Matplotlib, 3D slicer, ImageJ, MATLAB, Qupath, ImageScope, MLflow, Prefect, Aperio LaTeX.