# Aashish Mukund

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## Education

**University of Colorado Boulder (Matriculating)** — Boulder, CO
*Master of Science in Computer Science (GPA- 3.97/4)* — *Aug. 2023 – May 2025*
**TA:** CSCI 2400 (Fall 2023 and Spring 2025), CSCI 2700 (Spring 2024 and Fall 2024) **RA:** Earth Lab

**R.V. College of Engineering (CET Rank: 21/175K, Karnataka State)** — Bengaluru, India
*Bachelors in Computer Science and Engineering (GPA- 8.91/10)* — *Aug. 2016 – May 2020*

## Experience

**Image and Video Computing Group** — CU Boulder, CO
*Research Group Member (Advisor - Dr. Danna Gurari)* — *Jan. 2024-Dec. 2024*
- Led novel efforts to identify how multimodal LLMs reason during incorrect visual evidence on tasks like VQA.
- Benchmarked proprietary models(e.g. GPT-4o) and non-proprietary models on the IoU-PQ metric, and identified performance gaps in handling question ambiguity. **Tech Stack: Python, PyTorch, CURC GPU, HF Spaces**

**Earth Lab, CIRES** — CU Boulder, CO
*Graduate Research Assistant* — *June 2024-Aug. 2024*
- Designed and developed fuel status prediction models (MESMA) for SoCal regions, by leveraging Sentinel-2 satellite data. Curated a custom spectral library from Sentinel-2 pure-pixel data, currently being used by the lab.
- Set up an AWS pipeline for pre-processing the Sentinel-2 data. **Tech Stack: Python, AWS(S3, EC2), QGIS**

**Walmart Global Tech** — Bengaluru, India
*Software Engineer II | Software Engineer III* — *Aug. 2020-Apr. 2023*
- Led the efforts in configuring and solutionizing Splunk forwarder container across a large scale of virtual machines (5000+) in production, aiding in the process of failure point detection through log monitoring.
- Reduced turn around time for Data Extraction team by developing an API with CQRS using .NET framework.
- By implementing proof-of-concept (PoC) tests, optimized container resource usage and improved governance.
- Contributed to migration efforts from cloud to on-site virtual machines, achieving $1.25M in cloud cost savings.
- **Tech Stack: Linux, C#, Azure Cloud (IoT Edge), Docker, Kubernetes, .NET, Prometheus, Grafana**

**Indian Institute of Science (IISc RBCCPS)** — Bengaluru, India
*Research Intern (Advisor - Dr. Raghu Krishnapuram)* — *Dec. 2019-June 2020*
- Generated RGB-D dataset by simulating turtlebot3 using ROS and Gazebo for 3D reconstruction.
- Leveraged the dataset for 3D reconstruction using Microsoft Kinect Fusion, 3D segmentation with PointNet++, and scene completion using ScanComplete. **Tech Stack: Python, PyTorch, ROS 1.0, Gazebo, MeshLab**

## Publications

Keerthan, **Mukund A.**, Nagaraj, Prakash, "U-shaped Transformers for 3D Lung Cancer Segmentation", International Conference on Knowledge Engineering and Communication Systems 2022, **IEEE** [link]

Keerthan, **Mukund A.**, Nagaraj, Prakash, "LeafViT: Vision Transformers based Leaf Disease Detection", International Conference on Computational Intelligence and Computer Vision 2022, **Springer** [link]

## Projects (all projects at aashish75.github.io)

**Attention Visualization as Evidence For VQA (Independent Study)** — *Jul. 2024-Dec. 2024*
- Implemented an end-to-end Grad-CAM based attention visualisation pipeline in Visual Question Answering.
- Deployed backend on Hugging Face Spaces (Gradio app) and hosted frontend (HTML/CSS/JS) on GitHub Pages.

**LoRA in Medical VQA on Pathology Images (NLP Final Project)** — *Feb. 2024-Apr. 2024*
- Optimized BLIP for Visual Question Answering (VQA) while reducing computational overhead using LoRA.
- Model demonstrated 33.55% increase in accuracy on yes/no questions compared to the non-finetuned version.

## Technical Skills

**Languages**: Python, C++, MATLAB, SQL, Java **AI/ML Frameworks**: PyTorch, TensorFlow, Keras, OpenCV
**Web & Backend**: Flask, Spring Boot, REST API **Cloud & DevOps**: Docker, Kubernetes, AWS, GCP, Ansible
**Developer Tools**: Git, Visual Studio, Postman, Jupyter Notebook