

KARTHIKEYA JAYARAMA

Philadelphia, PA

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EDUCATION

University of Pennsylvania

Aug, 2023 – May, 2025

MSE, Electrical and Systems Engineering.

Philadelphia, PA

- **Advisor:** Dr. Victor M. Preciado
- **Courses:** Linear Systems Theory (ESE 5000), Graph Neural Networks (ESE 5400), Principles of Deep Learning (ESE 5460)

PES University

Aug, 2019 – May, 2023

B.Tech, Electronics and Communication Engineering. GPA - 3.88 / 4.0

Bangalore, India

- **Thesis:** Multi-terrain Robot for identification of White-Stem Borer Disease in Arabica Coffee Plantations
- **Advisor:** Dr. Shikha Tripathi
- **Relevant Courses:** Control Systems, Pattern Classification, Artificial Neural Networks, Robotics Systems, Machine Learning, Reinforcement Learning.

SKILLS

- Programming Languages: Python, C++, C, Go, Kotlin, JavaScript, MATLAB, Dart
- Frameworks: PyTorch, SciKit-Learn, Pandas, NumPy, Matplotlib, Seaborn, ROS, OpenCV, Django, React.js
- Research Interests: Robotics, Machine Learning, Computer Vision

EXPERIENCE

University of Pennsylvania

Aug, 2023 – Dec, 2023

Teaching Assistant

Philadelphia, PA

- TA for ESE 3050 - Foundations of Data Science.
- Instructor: Victor M. Preciado

Banyan Intelligence

June, 2022 – May, 2023

Indian Institute of Science, Software Engineering Intern

Bangalore, India

- Designed RAN simulator architecture from scratch connecting open source simulator, E2 Node-sim and near-RT RIC.
- Optimized throughput of network from 42 to 56 percent with RAN being control decision from near- Real Time RIC.
- Improved response time from 11ms to 1ms between RAN simulator and near-RT RIC.
- Developed a Drive Test tool that optimal collect 3000 packets from more than 20 UEs every second, then decode, process and store refined data.
- Tech stack: Open-RAN, C, C++, Go, Python, Kotlin, Dart, Docker, Kubernetes

PROJECTS

NavNBK | Python, ROS, Gazebo, Blender, Pytorch, RayTune

- Modelled nonlinear all-terrain robot dynamics into Bi-linear dynamics using Autoencoders and Koopman theory with validation accuracy around 82 percent (Custom Dataset contains 1.4×10^6 trajectory points).
- Optimized the latency of MPC using bilinear realization by 100 milliseconds as compared to nonlinear realization of system dynamics.
- Optimized hyperparameter search by developing distributed tuning process using RayTune which reduced time by 2 hours for each hyperparameter queue.
- Github Link: https://github.com/jayaramakarthikeya/Jackal_MPC

Land Cover | Python, Pytorch OpenCV

- Designed to predict land cover in the region of satellite images which achieved mean Intersection over Union of 40.2 and pixel accuracy of around 93 percent.
- Extended the project to predict cloud cover which achieved pixel accuracy of around 87 percent by using UNET model with a robust data pipeline for the given segmentation task.
- Github Link: https://github.com/jayaramakarthikeya/land_cover

Sign Language Translator | Python, Dart, PyTorch, OpenCV, ONNX, Flutter

- Optimized detection of real-time hand signals using binary ONNX model which achieved 94 percent of validation accuracy.
- Github Link for model and OpenCV output: <https://github.com/jayaramakarthikeya/SignLanguage>

HONORS AND AWARDS

- Recipient of the **Dean's Scholarship** for consecutive six semesters at PES University.