Poornima Jaykumar Dharamdasani
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EDUCATION

NORTHEASTERN UNIVERSITY Boston, MA
Master of Science in Artificial Intelligence: GPA: 3.86/4 Aug. 2023 – Present
Relevant Coursework: Algorithms, Natural Language Processing, Large Language Models, MLOps

RAMAIAH INSTITUTE OF TECHNOLOGY Bengaluru, India
B.E. in Electronics and Communication Engineering : GPA: 9.03/10 Aug. 2016 – Aug. 2020

TECHNICAL SKILLS

Languages: Python, C++, C | **Software Tools and Frameworks:** ROS, ROS2, Docker, Git, Flask, MLflow, WandB
Libraries: OpenCV, PyTorch, Keras, TensorFlow, TensorFlow Lite, Nvidia TensorRT, Numpy, Pandas, scikit-learn

WORK EXPERIENCE

Danfoss Power Solutions Boston, USA
Machine Learning Co-op May 2024 – Dec 2024

- Developed a **3D person segmentation** pipeline **optimized for Jetson Orin**. Tested with different stereo cameras, achieving **95% accuracy up to a range of 25m** across diverse environmental conditions. Implemented in ROS1/ROS2.
- Validated the accuracy of the pipeline through **software synchronization and cm-level accurate targetless auto-calibration of 3D LiDAR and cameras**. **DB-scan clustering** was implemented to handle outliers in the point cloud.
- **Achieved $6,000 in annual savings** by automating the calibration process, eliminating the need for manual software. Conducted comparative camera analyses, **enhancing client recommendations** and reducing hardware expenses.
- Spearheaded the integration of **WandB for MLOps**, after feature and cost analysis, enhancing **model tracking and experimentation efficiency** for road and lane segmentation on the CamVid dataset.

ARTPARK (AI & Robotics Technology Park), **IISc** (Indian Institute of Science) Bengaluru, India
Computer Vision & Robotics Engineer Apr. 2021 – Jul. 2023

- Enhanced robot localization by sensor fusion of CCTV cameras with onboard lidar, based on computer vision and particle filter. Achieved **60% localization enhancement**, resulting in a **paper publication** **and a patent** filing.
- Led and **mentored a team of 4 interns** for deep learning-based robot pose estimation and camera-lidar-based autonomous navigation in dynamic settings. Conducted effective pilot trials at the JRD Library and **published** in **ICRA workshop, 2023**.
- Developed a **C++ plugin** to modularize legacy AMCL code, contributing to the **ROS2 open-source repository**.

Robert Bosch Center for Cyber-Physical Systems(RBCCPS), IISc Bengaluru, India
Technical Associate Mar 2020 – Apr. 2021

- Implemented deep learning-based **unmarked Indian road segmentation** in TensorFlow for different daylight conditions. Optimized the model for runtime using Nvidia TensoRT to **achieve 87% accuracy** on Nvidia Jetson Nano.
- Implemented a **self-supervised monocular depth** estimation pipeline using PyTorch tailored to the **Indian Driving Dataset**, alongside a compliance detection and **human pose estimation and tracking system**. Demonstrated convincing **proof of concept to Larsen & Toubro construction** clients, leading to further business engagement.

RELEVANT ACADEMIC PROJECTS

Confidence Scoring to Detect Hallucinations in Large Language Models Sept 2024-Nov 2024
Implemented "LLMs Know More Than They Show" on the MedQuad dataset to detect hallucinations in LLMs. Fine-tuned **LLaMA 3.2 using QLoRA** and used Mistral 7B with in-context learning to extract exact answer tokens. Achieved **78% error detection accuracy** with a **logistic regression probing classifier.**

Image and text generation from Scratch July 2024-Aug 2024
Developed a **GAN** for image generation and a **transformer model** for dialog text generation. Both models were implemented from scratch and achieved an **inception score of 7.5** and a perplexity score of 3.7 respectively.