RAGHURAM CAULIGI SRINIVAS

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EDUCATION

New York University **New York, USA**
M.S. Electrical Engineering **Expected 2025**
Coursework: Deep Learning, Reinforcement Learning, NLP with Representation Learning

Birla Institute of Technology and Science (BITS), Pilani **Hyderabad, India**
B.E. Electrical and Electronics Engineering **2023**
Minor in Robotics and Automation

WORK EXPERIENCE

Graduate Research Assistant **New York**
Agile Robotics and Perception Lab (ARPL), NYU Nov 2023 - Present

- Developed a stereo-visual-inertial calibration pipeline for Intel RealSense cameras using Kalibr, achieving sub-centimeter alignment accuracy in OpenVINS-based SLAM.
- Led full sensor calibration (intrinsics, extrinsics, T_cam_imu) and integrated into ROS2 for real-time multi-sensor fusion and navigation.
- Authored calibration procedures for depth and IMU sensors, enabling consistent manufacturing and field workflows.
- Collaborated with controls and perception teams to anchor calibration requirements for robust state estimation.

Software Engineering Intern **Remote**
Scoutos Inc June - Aug 2024

- Architected scalable LLM evaluation systems on Google Cloud using FastAPI and Docker, ensuring robust performance and scalability.
- Designed Retrieval-Augmented Generation (RAG) pipelines for efficient knowledge retrieval and contextual integration.

Software Engineering Intern **Bengaluru, India**
RBCCPS, Stoch Lab at IISc June - Aug 2022

- Built a multi-view stereo pipeline using COLMAP for high-precision 3D reconstruction and visual-inertial odometry with sub-meter accuracy.
- Designed point cloud registration and mesh generation algorithms for detailed terrain mapping.

PROJECTS

KITTI Dataset 3D Point Cloud Processing and Visualization
Python, OpenCV, PyTorch *April - May 2024*

- Designed an end-to-end pipeline for processing, and analyzing large-scale point cloud data from the KITTI dataset.
- Implemented geometric feature extraction and semantic segmentation using self-supervised learning techniques.
- Visualized 3D point clouds with interactive tools for better analysis and debugging of SLAM systems.

Dual Decoder Based Image Colorization **GitHub**
Python, PyTorch, TensorBoard

- Created a robust training pipeline for a dual-decoder architecture, including modular data loaders, dynamic learning rate schedulers, and validation routines.
- Deployed TensorBoard and Weights & Biases for real-time monitoring of model performance metrics and hyperparameter optimization.
- Achieved significant colorization improvements through advanced data augmentation, iterative model evaluation, and precise tuning.

MR Image Reconstruction Using Deep Learning
Python, PyTorch, NumPy

- Designed and implemented a hybrid MoDL architecture combining data consistency with learnable components for accelerated MRI reconstruction.
- Developed a complex-valued convolutional network for efficient handling of real-imaginary k-space data.
- Achieved state-of-the-art PSNR and SSIM improvements on public MRI datasets, validating against benchmarks.

TECHNICAL SKILLS

Robotics & Control: Calibration (camera-IMU, factory/field), SLAM, Visual-Inertial Odometry, Reinforcement Learning
Computer Vision: Multi-View Stereo, 3D Reconstruction, Depth Estimation, Structure from Motion
Programming: C++, Python, ROS2/ROS, MATLAB, Docker
Deep Learning: Neural Network Training/Deployment, Vision Transformers, Self-Supervised Learning