Ajay Narasimha Mopidevi

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Education

University of Colorado Boulder — Boulder, CO
Masters of Science in Computer Science — GPA: 4.0/4.0 — *Aug. 2022 – Dec 2023(Expected)*

Indian Institute of Technology, Guwahati (IITG) — Guwahati, India
Bachelors of Technology in Electronics and Communication Engineering — *Aug. 2013 – May 2017*

Courses: Computer Vision, Computational Photography, Deep Reinforcement Learning, Natural Language Processing

Technical Skills

Languages: Python, C/C++, Matlab
Machine Learning Frameworks: Keras, Pytorch, Tensorflow
Tools: Git, Open3D, Meshlab, CloudCompare, Visual Studio, PyCharm, Eclipse
Libraries: OpenCV, ROS, OpenCL, OpenGL, OpenMP, scikit-learn, pandas, NumPy, Matplotlib

Experience

Samsung Semiconductors India R&D — Bangalore, India
Computer Vision Research Engineer, Multimedia Solutions Team — *July 2020 – July 2022*

- Developed **3D scene reconstruction** algorithm with only the depth-data from ToF sensors, achieving a real-time processing speed of **20fps**
- Automated the alignment of output 3D scene with groundtruth and improved the **accuracy by 5%** by detecting and removing outliers
- Optimized Samsung's CMOS camera sensor noise reduction algorithm with OpenMP parallel programming, thereby reducing the algorithm runtime by **33%**
- Reduced the latency of Remosaic deep learning models for 200M pixel camera sensor using **quantization** and **pruning** techniques by 10 % with an unnoticeable degradation of 0.1% in perceptual quality

Qualcomm — Bangalore, India
Software Engineer, Audio Quality Validation Team — *Aug. 2017 – June 2020*

- Spearheaded the development and maintenance of python audio library to evaluate both the objective and perceptual audio quality of the Bluetooth headsets
- Enhanced python automated test framework with new features that populate test vectors and visualize audio output signals, leading to a 10%-15% reduction in both the validation and development teams' efforts

Projects

Radar based Navigation
Autonomous Robotics and Perception Group(ARPG) — *Sep 2022 – Present*

- Utilized only the radar data, sparse pointclouds compared to Lidar data, to overcome the challenges in visually degraded scenarios and improved the odometry estimation by **8%** , using **transformer** and DeepVO architecture
- Developed transformer based architecture for upsampling the sparse mmWave radar FMCW data to dense pointclouds, providing more comprehensive spatial information in navigation.

Electron Tomography Segmentation
Kasinath Aydin Lab — *May 2023 – Present*

- Achieved 92% accuracy in segmenting electron structures like ribosomes, membrane using $< 1\%$ of the entire tomogram for training
- Designed U-Net architectures specifically tailored for tomograms captured at different scales, resulting in a f1 score of 78% for segmentation

Publications

- Tell Me Where to Go: A Composable Framework for Context-Aware Embodied Robot Navigation
- Grouped BERT for Multi-Label classification to reason the human values behind the arguments *(Accepted to ACL 2023)*