Nitheesh K Lakshminarayana

Roboticist passionate about Computer Vision and Deep Learning
nitheeshkl@cmu.edu | +91-9538713332 | https://nitheeshkl.in

Education

Carnegie Mellon University - Robotics Institute, School of Computer Science — Pittsburgh, PA
Master of Science in Computer Vision | Starting Feb 2021 — May 2022 (Expected)

Visvesvaraya Technological University, PES Institute of Technology — Bangalore, India
Bachelor of Engineering in Computer Science | GPA: 8.60/10.0 — June 2012

Professional Experience

Intel Corporation, 2012 - 2020

R&D Engineer - Bangalore, India — Aug 2017 - Dec 2020

AutoNUE: Autonomous Navigation in Unconstrained Environments

- Developed ROS-based infrastructure and evaluation pipelines for large-scale multi-modal (Stereo & Mono Cams, LiDAR, GPS, IMU) data capture from electric cars, targeted at Indian AD scenarios (github.com/intel/driving-data-collection-reference-kit).
- Created AD datasets in collaboration with IIIT-H that is released as **India Driving Dataset (IDD)** - world's first open dataset on Indian driving conditions (http://idd.insaan.iiit.ac.in/).

Point-Cloud Fusion with LiDAR and Stereo Cameras

- Evaluated fusion of sparse point-clouds from Velodyne VLP-16 LiDAR with point-clouds from stereo cameras to create dense point-clouds for improving the accuracy of 3D object detection in AD scenarios.
- Analyzed 3D object detection algorithms (AVOD, PointRCNN) and Pseudo-LiDAR representations on AD datasets (IDD, Kitti, Nuscenes) to benchmark and compare datasets for quality and performance.

Driver Monitoring Systems (DMS)

- Conceptualized and implemented a Gstreamer and OpenVINO based media processing pipeline for driver monitoring system based on Intel platform for Indian road conditions.

Other Projects

- Investigated self-supervised learning techniques involving jigsaw and rotation, based on intrinsic dimensionality reduction using DeepMDS for image classification achieving 72% mAP (3rd rank in FASSL global Challenge at ICCV'19) on VOC07 dataset.
- Built Gstreamer based pipelines to use GigE cameras as V4L2 cameras on Linux.
- Assisted in defining and evaluating the localization and constrained-environment challenges for the *"AutoNUE"* workshop in ECCV 2018 and ICCV 2019.

System Software Engineer - Santa Clara, USA — Sep 2014 - Jun 2017

- Designed and implemented Core platform SDKs for Intel's wearable platforms based on Intel Curie included in *Xiaomi's RunMi smart shoes*, and *Oakley's Radar Pace* showcased in the CEO Keynote at CES'16.

Linux System Engineer - Bangalore, India — Jul 2012 - Aug 2014

- Programmed Android power management drivers, developed Voltage Regulator Framework for the platform, and Module Level DVFS to deliver Intel's Cherrytrail platform.

Publications & Technical Reports

- Nitheesh K. Lakshminarayana, "Large Scale Multimodal Data Capture, Evaluation, and Maintenance Framework for Autonomous Driving Datasets", *Workshop on Autonomous Navigation in Unconstrained Environments, ICCV-2019*.
- Ameet Rahane and Nitheesh K. Lakshminarayana and Anay Majee, "Learning Intrinsic Space Feature Vectors for Self-Supervised Learning", *Internal Technical Report, 2019*.
- Nitheesh K. Lakshminarayana and Shreesh Mohalik and Anbumani Subramanian, "Evaluation of Sparse LiDAR Data for 3D Object Detection in Driving Scenarios", *Internal Technical Report, 2019*.
- Nitheesh K. Lakshminarayana and Anbumani Subramanian, "Ensuring Quality in Creating AD Datasets", *Intel SWPC-2018*.

Skills

Programming Languages: C, C++, Python, Java
Tools & Frameworks: ROS, Gstreamer, OpenCV, OpenVINO, PyTorch, TensorFlow
Development Environments: Linux and Android
Hardware: x86 platforms, prototyping on Arduino, and Raspberry Pi