

Nitheesh K Lakshminarayana

Robotist passionate about computer vision and deep learning. Seeking summer internship in computer vision/machine perception.

nitheeshkl@cmu.edu | +1-650-732-7170 | <https://nitheeshkl.me>

Education

Carnegie Mellon University - Robotics Institute, School of Computer Science

Master of Science in Computer Vision (MSCV)

Pittsburgh, PA

Dec 2022

Visvesvaraya Technological University - PES Institute of Technology

Bachelor of Engineering in Computer Science | GPA: 8.6/10

Bangalore, India

Jun 2012

Professional Experience

Intel Corporation

R&D Engineer – Bangalore, India

Aug 2017–Jul 2021

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 (~4TB/hr) from electric cars, targeted at Indian AD scenarios ([github: driving-data-collection-reference-kit](#)).
- Created AD datasets in collaboration with IIIT-H, publicly 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 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)

- Led engineering team of 3 to design and develop a Gstreamer and OpenVINO based media processing pipeline for DMS (Yawn, eye closure, gaze, mood prediction) based on x86 platform integrated with Intel's Mobileye module for Indian road conditions.
- Demonstrated DMS prototype at multiple national conferences (like Computer Vision Forum, India, 2019). Presented MVP plan and strategy to senior management resulting in \$1MM product development funding.

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.
- Devised Gstreamer based pipelines to use GigE cams as V4L2 cams on Linux; discovered and resolved flickering issue occurring from camera fps and electrical frequency (50/100Hz) mismatch and illustrated using GigE cams as webcams for Zoom & Skype.
- Formulated Localization and Constrained-Environment challenges problem statement and evaluation criteria for "AutoNUE" workshop at ECCV 2018 and ICCV 2019.

System Software Engineer – SF Bay area, USA

Sep 2014–Jun 2017

- Determined and implemented new methods and process improvements for Core platform SDKs of Intel's wearable (Curie) module included in Xiaomi's RunMi smart shoes, and Oakley's Radar Pace smart eyewear showcased in CES 2016 CEO keynote.

Linux System Engineer – Bangalore, India

Jul 2012–Aug 2014

- Programmed Android power management drivers, built Voltage Regulator Framework for x86 mobile platform, and Module Level DVFS to deliver Intel's Cherrytrail platform.

Conference Presentations and Publications

- 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", *Intel 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 Software Professionals Conference, 2018*

Skills

Programming Languages: C, C++, Python, Java

Tools & Frameworks: ROS, Gstreamer, OpenCV, OpenVino, PyTorch, TensorFlow

Sensors & Hardware: UVC & GiGE Mono/Stereo cams, VLP/HDL LiDARs, x86 platforms, Arduino, Raspberry Pi