Nitheesh K Lakshminarayana

Seeking full-time opportunities in computer vision/machine perception.
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Education

Carnegie Mellon University - Robotics Institute, School of Computer Science — Pittsburgh, PA
Master of Science in Computer Vision (MSCV) | GPA: 3.9/4.0 — Dec 2022
Relevant Coursework: Learning for 3D vision, Visual Learning & Recognition, Geometry based methods in Vision, SLAM

Visvesvaraya Technological University - PES Institute of Technology — Bangalore, India
Bachelor of Engineering in Computer Science | GPA: 8.6/10.0 — Jun 2012

Professional Experience — Jul 2012—Aug 2022

Mujin Inc, Computer Vision Research Intern – Tokyo, Japan — Jun 2022—Aug 2022

- Developed clustering-based unseen/novel object instance detection method using RGB-D fusion to solve "first-pick" task in robotic bin-picking for real-world warehouse scenarios.
- Designed and implemented background services to integrate pytorch based deep-learning instance detections into existing classical-CV based object detection pipelines using zero-copy IPC strategies on production systems.
- Generated Blender-based BOP-like synthetic RGB-D dataset for instance segmentation in bin-picking task. Comprised of 20 objects in 3 packing scenarios (tight, semi-ordered, randomly dropped) to simulate ZIVID sensor data.

Intel Corporation

R&D Engineer – Bangalore, India — Aug 2017—Jul 2021

- Created **India Driving Dataset (IDD)** - world's First open dataset on Indian driving conditions (http://idd.insaan.iiit.ac.in/), in collaboration with 3 professors from IIIT-H, targeted at autonomous navigation in unconstrained environments.
- Led engineering team of 3 to design and develop a Gstreamer and OpenVINO based media processing pipeline for Driver Monitoring System integrated with Intel's Mobileye module for Indian road conditions.
- Analyzed 3D object detection algorithms (AVOD, PointRCNN) and Pseudo-LiDAR representations on AD datasets (IDD, Kitti, Nuscenes) with 2 researchers to benchmark performance and dataset quality.
- 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.

System Software Engineer – SF Bay area, USA — Sep 2014—Jun 2017

- Determined and implemented new methods and process improvements in a team of 6 for 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.

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

- Programmed Android power management drivers, built Voltage Regulator Framework for 2 PMICs on x86 mobile platform, and Module Level DVFS to deliver Intel's Cherrytrail platform.

Academic Projects

- ***Pose Estimation for Robotic Manipulation***—Developed unseen object detection and pose estimation pipeline for warehouse bin-picking in challenging scenarios (textureless, semi-rigid, single SKU, tightly packed objects).
- ***Semi-Supervised 2D-3D Correspondences using NeRF***—Investigated approaches to identify 2D-3D correspondences using a NeRF based pipeline to predict accurate pose information of objects from novel/unseen views.

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
- **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: PyTorch, ROS, OpenCV, Gstreamer, OpenVino, TensorFlow
Sensors & Hardware: UVC & GiGE Mono/Stereo cams, VLP/HDL LiDARs, x86 platforms, Arduino, Raspberry Pi
Specialties: Multi-view 3D Geometry, Segmentation, NeRF, ROS, Creating vision datasets, Linux system services & libraries, Software Design & Deployment