Ganesh Iyer

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Education

Carnegie Mellon University, School of Computer Science — *Pittsburgh, PA*

Masters of Science in Robotic Systems Development (GPA: **4.05/4.33**) — *May 2020*

- **Teaching Assistant**: Deep Reinforcement Learning & Control (undergraduate)
- **Selected Courses**: Computer Vision, Robot Localization & Mapping, Robot Autonomy, Manipulation, Estimation & Control, Robot Mobility, Deep Reinforcement Learning & Control (graduate), Geometric Vision

Mumbai University — *Mumbai, India*

Bachelors of Engineering in Electronics and Telecommunication Engineering (GPA: **8.11/10.0**) — *August 2016*

- **Selected Courses**: Signal Processing, Image & Video Processing, Fuzzy Logic & Neural Networks, Computer Networks

Publications

gradSLAM: Dense SLAM meets Automatic Differentiation — *ICRA 2020*

Krishna Murthy, **Ganesh Iyer**, Liam Paull — *Paper* | *Project Page*

Geometric Consistency for Self-Supervised End-to-End Visual Odometry — *CVPR(Workshop) 2018*

Ganesh Iyer*, Krishna Murthy*, Gunshi Gupta, K. Madhava Krishna, Liam Paull — *Paper* | *Project Page*

CalibNet : Geometrically Supervised Extrinsic Calibration using 3D Spatial Transformer Networks — *IROS 2018*

Ganesh Iyer, Karnik Ram R., Krishna Murthy, K. Madhava Krishna — *Paper* | *Project Page*

Work Experience

Amazon.com Services LLC — *Sunnyvale, CA*

Applied Scientist — *June 2020 - Present*

- Designing and implementing algorithms pertaining to machine learning, computer vision, and graphics for accurate 3D modeling, avatar creation, and understanding of human body composition for the **Amazon Halo Body** service.

Xiaopeng Motors — *Mountain View, CA*

SLAM Software Engineer Intern — *May 2019 - Aug. 2019*

- Designed an end-to-end LIDAR Mapping Pipeline, including pointcloud filtering, registration, and a factor-graph based large-scale backend for pose graph optimization. This improved over proprietary GPS & GNSS odometry solutions by a factor of 0.5m in absolute translation error, with qualitative improvement in reconstructed map and lane-line alignment.

International Institute of Information and Technology — *Hyderabad, India*

Graduate Research Assistant — *July 2017 - June 2018*

- Developed self-supervised deep learning models for visual odometry and extrinsic calibration.
- Contributed to a traffic-sign detection platform for the Mahindra RISE Self-driving challenge, improving overall detection accuracy by 20%

Swaayatt Robots — *Bhopal, India*

Research Intern — *Aug. 2016 - June 2017*

- Implemented a stereo depth computation pipeline for autonomous vehicles using Semiglobal Matching and Siamese Convolutional Networks.
- Created a facial pose tracking system from RGBD point clouds for Advanced Driver Assistance Systems
- Improved vehicular-data annotation time by a factor of 10 by implementing an annotation package using instance segmentation and tracking

Projects

Chefbot: Learning Self-Supervised Skill Models for the kitchen - Dough Manipulation — *Carnegie Mellon University*

Independent Study, Advised by: Prof. Oliver Kroemer — *Jan. 2020 - May. 2020*

- Developed a large-scale food interaction system to enable self-supervised learning by inferring properties of deformable food objects like vegetables and dough. Tested in simulation (NVIDIA FleX) and on real hardware (FRANKA arm). [Project Report]

Learning Diverse Goal-Conditioned Policies for Frontier Selection in Navigation — *Carnegie Mellon University*

Course Project: Deep Reinforcement Learning for Robotics — *Jan. 2020 - May. 2020*

- Designed a hierarchical policy for diverse navigation in partially observable grid-map environments: A global policy selects sub-goal 'frontiers', while a local policy is trained using a map-generation curriculum to reach proposed sub-goals. [Project Report]

RAMS: Robust Aerial Manipulation System — *Carnegie Mellon University*

Capstone Project/MBZIRC Challenge — *Jan. 2019 - Feb. 2020*

- Participated in the design and development of an aerial manipulation platform capable of recognizing objects and lifting targeted payloads upto 1.5kg using an onboard perception subsystem and visual servoing. [Project Demos]

Skills

Programming Languages	Python, C/C++
Libraries	PyTorch, OpenCV, Tensorflow, Point Cloud Library, Ceres Solver, ROS, Git, Docker