

# Ganesh Iyer

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## Education

### Carnegie Mellon University, School of Computer Science

Pittsburgh, PA

MASTERS OF SCIENCE IN ROBOTIC SYSTEMS DEVELOPMENT (AGGREGATE CGPA: **4.05/4.33**)

Expected. May 2020

- **Teaching Assistant:** Undergraduate Deep Reinforcement Learning
- **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

August 2016

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

## Work Experience

### Xiaopeng Motors

Mountain View, CA

SLAM SOFTWARE ENGINEER INTERN

May 2019 - Aug. 2019

- Designed and implemented an offline end-to-end LIDAR Mapping Pipeline, including pointcloud filtering, registration, and a factor-graph based large-scale backend for pose graph optimization.
- Improved over proprietary GPS & GNSS odometry solution 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

## 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](#)

## Projects

### 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 Page](#)] [[Demos](#)]

### Chefbot: Learning Manipulation Skill Models for the kitchen

Carnegie Mellon University

INDEPENDENT STUDY, ADVISED BY: PROF. OLIVER KROEMER

Jan. 2020 - May. 2020 (ongoing)

- Developing an unsupervised learning based framework that predicts the effects of simple manipulation skills on deformable objects like vegetables and dough. Currently being tested on the FRANKA arm. [[Project Demo](#)]

### Deep-Event VO

Carnegie Mellon University

COURSE PROJECT: ROBOT LOCALIZATION AND MAPPING

Jan. 2019 - May. 2019

- Designed a recurrent convolutional network that fuses intensity and event based image feature streams to make continuous visual odometry predictions for high speed applications using event-based cameras. [[Project Link](#)]

### Learning Diverse Goal-Conditioned Policies for Navigation

Carnegie Mellon University

COURSE PROJECT: DEEP REINFORCEMENT LEARNING FOR ROBOTICS

Jan. 2020 - May. 2020 (ongoing)

- Designing a framework that can embed goal-conditioned navigation trajectories in occupancy grid sub-maps or grid-worlds using a sequence-to-sequence model. These embeddings are then used to generate similar navigation policies targeting different goals in a map-agnostic fashion.

## Skills

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