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**) — *Aug. 2018 - 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**) — *Aug. 2012 - Aug. 2016*

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

Work Experience

Amazon.com Services LLC — *Sunnyvale, CA*

Applied Scientist II — *June 2020 - Present*

- Designed and deployed algorithms for accurate and real-time 3D human body reconstruction and prediction of DEXA-grade regional body composition factors (body measurements, muscle mass, visceral body fat) from sparse views for the Amazon Halo Body service.
- Key contributor to a synthetic data generation pipeline for parametric human meshes based on non-rigid alignment with 3D body laser scans.
- Led the scientific and technical implementation of core on-device CV/ML features for an upcoming Fitness AI product.

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 backend for pose graph optimization. Improved over proprietary GPS & GNSS odometry solutions by 0.5m in absolute translation error.

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

Graduate Research Assistant — *July 2017 - June 2018*

- Developed and published work on unsupervised deep learning models for visual odometry and extrinsic cross-sensor calibration.

Swaayatt Robots — *Bhopal, India*

Research Intern — *Aug. 2016 - June 2017*

- Assisted in development of Swaayatt's first prototype autonomous vehicle for unstructured environments. Worked on onboard sensor integration, camera sub-systems, robot middleware, and offline algorithms for facial pose tracking, auto-annotation, stereo depth computation etc.

Publications and Patents

ConceptFusion: Open-set Multimodal 3D Mapping — *Accepted to RSS 2023*

Krishna Murthy, Alihusein Kuwajerwala, Qiao Gu, Mohd Omama, Tao Chen, Shuang Li, **Ganesh Iyer**, et. al. — *Paper* | *Project Page*

Body Dimensions from Two-Dimensional Body Images — *US Patent 17/489,393, March 2023*

Amit Agrawal, Siddharth Choudhary, Antonio Criminisi, **Ganesh Iyer**, Jinjin Li, Brandon Smith, et. al. — *Patent Publication*

Mesh Strikes Back: Fast and Efficient Human Reconstruction from RGB videos — *preprint, submitted to ICCV 2023*

Rohit Jena, Pratik Chaudhari, James Gee, **Ganesh Iyer**, Siddharth Choudhary, Brandon M. Smith — *Paper*

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

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 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]

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 up to 1.5kg using an onboard perception subsystem and visual servoing. [Project Demos]

Skills

Programming Languages	Python, C++
Frameworks	PyTorch, Tensorflow, OpenCV, Point Cloud Library, ROS, Git, Docker