

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

- **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

- Currently designing, training and deploying multi-modal (text, audio, video, 3D) generative models for Amazon Fashion.
- Designed and shipped 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.

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

- Published research on unsupervised deep learning models for visual odometry and extrinsic LiDAR-camera 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, and stereo depth estimation.

Publications and Preprints

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 |  Video |

gradSLAM: Dense SLAM meets Automatic Differentiation

ICRA 2020

KRISHNA MURTHY, GANESH IYER, LIAM PAULL

 Paper |  Project Page |  Video |

ConceptFusion: Open-set Multimodal 3D Mapping

RSS 2023

KRISHNA MURTHY, ALIHUSEIN KUWAJERWALA, QIAO GU, MOHD OMAMA, TAO CHEN, SHUANG LI, GANESH IYER, SOROUSH

SARYAZDI, NIKHIL KEETHA, AYUSH TEWARI, JOSHUA B. TENENBAUM, CELSO MIGUEL DE MELO, MADHAVA KRISHNA, LIAM

PAULL, FLORIAN SHKURTI, ANTONIO TORRALBA

 Paper |  Project Page

Mesh Strikes Back: Fast and Efficient Human Reconstruction from RGB videos

preprint, Mar. 2023

ROHIT JENA, PRATIK CHAUDHARI, JAMES GEE, GANESH IYER, SIDDHARTH CHOUDHARY, BRANDON M. SMITH

 Paper

Development and validation of an accurate smartphone application for measuring waist-to-hip circumference ratio

NPJ Digital Medicine, Sep. 2023

SIDDHARTH CHOUDHARY, GANESH IYER, BRANDON M. SMITH, JINJIN LI, MARK SIPPEL, ANTONIO CRIMINISIM STEVEN B.

HEYMSFIELD

 Paper

SplatArmor: Articulated Gaussian splatting for animatable humans from monocular RGB videos

preprint, Nov. 2023

ROHIT JENA, GANESH IYER, SIDDHARTH CHOUDHARY, BRANDON M. SMITH, PRATIK CHAUDHARI, JAMES GEE

 Paper |  Project Page

Patents

Body Dimensions from Two-Dimensional Body Images

US Patent 11861860, Jan. 2024

AMIT KUMAR AGRAWAL, SIDDHARTH CHOUDHARY, ANTONIO CRIMINISI, GANESH SUBRAMANIAN IYER, JINJIN LI, PRAKASH

RAMU, BRANDON MICHAEL SMITH, DURGA VENKATA KIRAN YAKKALA

 Patent Publication

Workshops

Geometric Consistency for Self-Supervised End-to-End Visual Odometry

GANESH IYER*, KRISHNA MURTHY*, GUNSHI GUPTA, K. MADHAVA KRISHNA, LIAM PAULL

Learning to Navigate in Unseen Cluttered Structured Environments

VIDHI JAIN, GANESH IYER, KATIA SYCARA

CVPR (Workshop) 2018

 Paper |  Project Page

NeurIPS WiML Virtual 2020

 Paper |  Poster


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


- Worked on a robotic 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 Emika Panda 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]

Academic Service and Volunteering

2020-Present	Reviewer , IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR 2024) (Nominated Outstanding Reviewer Top-2%), IEEE International Conference on Robotics and Automation (ICRA), IEEE Robotics and Automation Letters (RA-L), International Conference on Intelligent Robots and Systems (IROS)
Spring, 2020	Teaching Assistant , 10403 - Deep Reinforcement Learning & Control (undergraduate), Carnegie Mellon University
Spring, 2018	Teaching Assistant , Introduction to Deep Learning Tools, Robotics Research Center Summer School, International Institute of Information and Technology, Hyderabad

Skills

Programming Languages	Python, C++
Frameworks	PyTorch, Tensorflow, Git, Docker, AWS, Robot Operating System (ROS), MATLAB