

Prasanna Sriganesh

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RESEARCH INTERESTS

- **Interaction-aware Motion Planning:** Developing algorithms that reason about robot-environment interactions to navigate realistic complex environments
- **Uncertainty-aware Active Sensing:** Developing strategies for robots to actively reduce environmental uncertainty through targeted sensing actions

EDUCATION

Carnegie Mellon University

Ph.D. in Robotics

Advisor: Dr. Matthew Travers

Pittsburgh, USA

Aug 2023 – Aug 2027 (Expected)

Carnegie Mellon University

Master of Science in Robotics, GPA: 4.12/4.0

Thesis: Fast Staircase Detection and Estimation with Multi-View Merging for Multi-Robot Systems [\[link\]](#)

Thesis Committee: Dr. Matthew Travers (chair), Dr. Howie Choset, Dr. Sebastian Scherer, Charles Noren

Pittsburgh, USA

Aug 2021 – Jul 2023

PES University

Bachelor of Technology in Electronics and Communication Engineering (Major)

GPA: 9.48/10, Rank 10 out of 325

Computer Science Engineering (Minor), GPA: 9/10

Bengaluru, India

Aug 2015 – Aug 2019

RESEARCH EXPERIENCE

Biorobotics Lab, Carnegie Mellon University

Graduate Student Researcher

Pittsburgh, USA

Nov 2021 – Present

Project – Multi-Modal Perception UnderGround (MMPUG)

- Designed and implemented a **novel staircase detection algorithm** using **3D point clouds**, achieving a **processing time of under 30ms** on an NVIDIA Jetson Xavier AGX (Published in IEEE ICRA 2023 [\[link\]](#))
- Developed a staircase modeling and bayesian estimation framework to **identify safe regions on cluttered or damaged staircases**, enabling accurate estimation of staircase location even **with partial observations and occlusions** (In review in IEEE Robotics and Automation Letters [\[link\]](#))
- Developed a **modular and interoperable system architecture** for **heterogeneous multi-robot field deployment**, inspired by lessons learned from the DARPA Subterranean Challenge (Presented at IEEE ICRA 2024 Workshop on Field Robotics [\[link\]](#))

Microsoft Innovation Lab, PES University

Undergraduate Research Assistant

Bengaluru, India

August 2018 – Jul 2019

Project – TONY Humanoid Robot, 17 DOF small-sized humanoid platform for research

- Developed an algorithm to enable **small-scale humanoid/bipedal robot** to **turn in-place using feet slippage** (Published in IEEE SII 2021 [\[link\]](#))
- Built a **17-DOF small-sized humanoid robot** as a research platform. Formulated an **inverse kinematics solution using geometric constraints** for generating stable walking gaits (Published in IEEE SII 2020 [\[link\]](#))

WORK EXPERIENCE

Cisco Systems Ltd.

Software Engineer

Bengaluru, India

Aug 2019 – Jul 2021

- Implemented feature enhancements to standardize APIs for Cisco's Network Compliance Check software
- Design automation scripts to benchmark timings and implement solutions for performance improvements

Honeywell Technology Solutions Lab Ltd.

Embedded Systems Intern

Bengaluru, India

Feb 2019 – Jun 2019

- Tested different real-time operating system (RTOS) components like memory unit etc. on an ARM processor
 - Deployment of embedded tools to test functionality of RTOS components
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PUBLICATIONS

- **Prasanna Sriganesh**, Burhanuddin Shirose, and Matthew Travers, "A Bayesian Modeling Framework for Estimation and Ground Segmentation of Cluttered Staircases", in *Review for IEEE Robotics and Automation Letters (RA-L)*, Dec 2024 [\[link\]](#)
 - **Prasanna Sriganesh**, James Maier, Adam Johnson, Burhanuddin Shirose, Rohan Chandrasekar, Charles Noren, Joshua Spisak, Ryan Darnley, Bhaskar Vundurthy and Matthew Travers, "Modular, Resilient, and Scalable System Design Approaches - Lessons learned in the years after DARPA Subterranean Challenge", in *IEEE ICRA Workshop on Field Robotics*, 2024 [\[link\]](#)
 - James Maier, **Prasanna Sriganesh** and Matthew Travers, "Longitudinal Control Volumes: A Novel Centralized Estimation and Control Framework for Distributed Multi-Agent Sorting Systems", in *Proc. 2024 IEEE International Conference on Robotics and Automation (ICRA)*, Yokohama, Japan, 2024 [\[link\]](#)
 - **Prasanna Sriganesh**, Namya Bagree, Bhaskar Vundurthy and Matthew Travers, "Fast Staircase Detection and Estimation using 3D Point Clouds with Multi-detection Merging for Heterogeneous Robots", in *Proc. 2023 IEEE International Conference on Robotics and Automation (ICRA)*, London, United Kingdom, 2023, pp. 9253-9259 [\[link\]](#)
 - **Prasanna Sriganesh** and Prajwal Rajendra Mahendrakar, "Generating curved path walking gaits for biped robots with deficient degrees of freedom", in *Proc. 2021 IEEE/SICE International Symposium on System Integration (SII)*, Iwaki, Fukushima, Japan, 2021, pp. 786-793 [\[link\]](#)
 - **Prasanna Sriganesh**, Prajwal Rajendra Mahendrakar and Rajasekar Mohan, "Solving inverse kinematics using geometric analysis for gait generation in small-sized humanoid robots," in *Proc. IEEE/SICE International Symposium on System Integration (SII)*, Honolulu, Hawaii, USA, 2020, pp. 384–389 [\[link\]](#)
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TEACHING EXPERIENCE / MENTORSHIP

16 - 474: Robotics Capstone, Carnegie Mellon University Jan – May 2024

- Conducted office hours for debugging systems issues and advised students on their robotics capstone project

16 - 450: Robotics Systems Engineering, Carnegie Mellon University Aug – Dec 2023

- Delivered a guest lecture on a case-study for robot system design, and graded assignments.

Thesis Committee Member

Student: James Maier, M.S. in Robotics, Carnegie Mellon University Aug 2023 – Jul 2024

- *Topic:* Material flow modeling and estimation on multi-agent sorting systems (Published in ICRA 2024 [\[link\]](#))
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LEADERSHIP

Core Member, Robotics Institute Student Organization, Carnegie Mellon University Mar 2024 – Present

- Organize student events for the robotics student community

Core Team Member, Microsoft Innovation Lab Aug 2018 – Jul 2019

- Mentored two undergraduate student teams during their summer research internships
- Review and interview student applications for the annual summer internship program
- Successfully organized the '#code' hackathon with students from multiple colleges across Bengaluru

IEEE Student Member Jan 2019 – Present

- Member of IEEE Robotics and Automation Society and IEEE Young Professionals
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AWARDS

- Seven-time recipient of the Prof. CNR Rao Scholarship (USD 2000) at PES University awarded to top 20% of the class
 - Two-time recipient of the Prof. MRD Scholarship (USD 1000) at PES University awarded to top 5% of the class
 - 1st place among 40 teams in the Cisco-RVCE hackathon at RV college of Engineering
 - Secured 1st prize at HackIT – Hackathon at Cisco Systems Ltd, Bengaluru, India
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SKILLS

- Programming: C++, MATLAB, Python
 - Software: Robot Operating System (ROS), Gazebo, Isaac Sim, Docker, Git
 - Robots/Platforms: Jetson AGX Orin/Xavier, Boston Dynamics Spot, Ghost Vision 60, Pixhawk
 - Others: HTML, DaVinci Resolve Video Editing
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