

Prasanna Sriganesh

prassi@cmu.edu | prassi007@gmail.com | <https://www.prassi.me>

RESEARCH INTERESTS

- **Belief-Space Motion Planning:** Designing planning algorithms that reason under uncertainty, enabling robots to actively gather information and safely navigate unstructured, partially observable environments.
- **Uncertainty-aware Sim-to-Real:** Developing computationally efficient, low-dimensional representations that bridge the sim-to-real gap, to enable direct deployment of robust policies trained in simulation onto real-world hardware.

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

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 and 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 – Belief in the Omniverse Space Stack (BOSS), in technical collaboration with NVIDIA AITC

- Developed a **real-time perception and uncertainty-aware world modeling system**, leveraging GPU-accelerated data structures (e.g., NVIDIA FVDB) to **efficiently segment and track clutter on staircases** for deployment on an NVIDIA Jetson AGX Orin [\[link\]](#)
- Trained a policy for **quadrupedal pedipulation** to enable **stable object pushing maneuvers on cluttered staircases** by intelligently switching between locomotive and manipulative modes. [\[link\]](#)

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 Bayesian staircase modeling and estimation framework to **identify safe regions on cluttered or damaged staircases**, enabling accurate estimation of staircase location even **with partial observations and occlusions** (Published in IEEE Robotics and Automation Letters (RA-L) 2025 [\[link\]](#))
- Developed a **modular and interoperable system architecture** for **heterogeneous multi-robot field deployment**, based on 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

- 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
-

SELECTED PUBLICATIONS

- **Prasanna Sriganesh**, Barath Satheeshkumar, Anushree Sabnis and Matthew Travers, "Action-Informed Estimation and Planning: Clearing Clutter on Staircases via Quadrupedal Pedipulation." *In Submission* (2025) [\[link\]](#).
 - **Prasanna Sriganesh**, Burhanuddin Shirose, and Matthew Travers, "A Bayesian Modeling Framework for Estimation and Ground Segmentation of Cluttered Staircases", in *IEEE Robotics and Automation Letters (RA-L)*, Vol. 10, Issue 5, 2025, pp. 4164 – 4171 [\[link\]](#)
 - **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 [\[link\]](#)
 - **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 [\[link\]](#)
 - 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, pp. 4420-4427 [\[link\]](#)
 - Zongyuan Shen, Burhanuddin Shirose, **Prasanna Sriganesh** and Matthew Travers, "CAP: A Connectivity-Aware Hierarchical Coverage Path Planning Algorithm for Unknown Environments using Coverage Guidance Graph", *accepted in. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2025 [\[link\]](#)
-

LEADERSHIP, TEACHING and MENTORSHIP**Teaching Assistant: 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

Teaching Assistant: 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 [\[link\]](#))

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
 - Successfully organized the '#code' hackathon with students from multiple colleges across Bengaluru
-

AWARDS

- Seven-time recipient of the Prof. CNR Rao Scholarship (USD 2000) at PES University for top 20% of class
 - Two-time recipient of the Prof. MRD Scholarship (USD 1000) at PES University awarded to top 5% of class
 - 1st place in the 2018 Cisco-RVCE hackathon and 1st prize at HackIT Hackathon at Cisco Systems Ltd, Bengaluru
-

SKILLS

- *Programming:* C++, MATLAB, Python, *Tools:* Robot Operating System (ROS1,2), Gazebo, Isaac Sim, Docker
 - *Robots/Platforms:* Jetson AGX Orin/Xavier, Boston Dynamics Spot, Ghost Vision 60, Pixhawk
 - *Others:* HTML, DaVinci Resolve Video Editing
-