Srushti Raste

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Education

Boston University Boston, USA
Master of Science in Robotics & Autonomous Systems *Sept 2023 – Jan 2025*
University of Mumbai, KJSCE Mumbai, India
Bachelor of Technology in Electronics Engineering *Aug 2019 – May 2023*

Research Experience

Research Associate, Soft Robots Lab — Legged Locomotion March 2025 – Present
Advisor: Professor Sonia Roberts *Wesleyan University*

- Upgraded a legacy robot by integrating new hardware and control to achieve stable jumping behavior.
- Iteratively designed and fabricated custom Aluminum and 3D-printed mounts to maintain the robot's weight despite the addition of heavier actuators and to ensure encoder alignment under high-impact jumps.
- Re-engineered the control architecture using a simplified torsional spring framework and implemented PD control with tuned parameters to achieve controlled jumps on acrylic beads (used as a sand analog).
- Documented and open-sourced full workflow including fabrication, assembly, testing, tuning and troubleshooting to enable reproducibility for other robotics researchers.
- Integrated force transducer and additional sensors for data collection of robot with different feet morphologies.

Research Associate, Soft Robots Lab — Soft Sensors March 2025 – Present
Advisor: Professor Sonia Roberts *Wesleyan University*

- Developed an assistive glove incorporating a novel strain sensor and a soft actuator to demonstrate its potential in assistive grasping, manuscript under review for ICRA 2026.

Morphable Biorobotics Lab — Metal Jamming Sept 2024 – Dec 2024
Advisor: Dr. Leah Geata, Professor Tommaso Ranzani *Boston University*

- Designed a Flexible Printed Circuit Board for a wearable haptic glove providing tactile feedback via stiffening of metal-jamming sheets actuated by Electropermanent magnets. Facilitated experiments and conducted human user studies to evaluate the glove's performance.
- **Publication:** L. T. Gaeta et al., "Jamming Metal Sheets Using Electropermanent Magnets for Stiffness Modulation," IEEE Robotics and Automation Letters, 2025.Link

Mechanics of Slender Structures Lab — Origami Actuator June 2024 – Aug 2024
Advisor: Professor Douglas Holmes *Boston University*

- Designed and fabricated Yoshimura-patterned origami-inspired soft actuators using Laser Cutting, exploring multiple bellow geometries and materials for pneumatic extension and bending.
- Conducted Constant curvature and grip strength evaluations, to quantify bending performance and force output.

Technical Skills

- **Robotics:** Kinematics, Dynamics, Control, Embedded Systems, Sensor & Actuator integration
- **Programming:** Embedded C, C++, MATLAB, Python
- **CAD & Circuit Design:** Fusion 360, Altium Designer, Eagle, LTspice, EasyEDA
- **Fabrication:** 3D Printing, WaterJet Cutter (ProtoMAX), Laser Cutting, CNC Router, Soldering
- **ML:** Reinforcement Learning, Imitation Learning, TensorFlow, PyTorch, Stable-Baselines3, OpenAI Gym
- **Simulation & Analysis:** MuJoCo, CARLA simulator, Abaqus FEA, Simulink

Mentorship

- Mentoring an Wesleyan undergraduate student over the semester for conducting jumping experiments with the robot for different foot morphologies, guiding experimental setup, testing, and data collection.
- Mentoring the Glastonbury GOATS, a First Lego League robotics team at Smith Middle School, CT, guiding them on Arduino programming and sensor integration.
- Served on the electronics team of KJSCE Robocon team, collaborating with peers on design and development of main circuit board for the National DD Robocon 2021 competition.
- Mentored 20 KJSCE undergraduate students in a two-day workshop, guiding them in building line-following and Wi-Fi-controlled robots using ESP32.