

Sayan Mondal

+1(858) 703 7251 • sayanmon@cs.cmu.edu • Website • in 6sayan1

Education

- ❖ **Carnegie Mellon University, The Robotics Institute** Sept'22 - present
Master of Science in Robotics **4.10/4.00 GPA**
- ❖ **Carnegie Mellon University** Sept'20 - May'22
Master of Science in Biomedical Engineering **3.88/4.00 GPA**
- ❖ **University of California San Diego** Sept'17 - April'20
Master of Science in Engineering Sciences (Mechanical Engineering) **3.67/4.00 GPA**
- ❖ **Jadavpur University, Kolkata, India** May'12 - June'16
Bachelor of Engineering in Mechanical Engineering **8.00/10.00 GPA**

Selected Graduate Courses

- **CMU** - Planning and Decision-making in Robotics (A) | Robot Learning (A) | Learning for 3D vision (A) | Optimal Control and Reinforcement Learning (A) | Underactuated Robots (A) | Computer Vision (A+) | Mobile Robots (A)
- **UCSD** - Linear Systems Theory | Parametric Identification | Soft Robotics | Linear Control Design | Nonlinear Systems | Robot Reinforcement Learning | Cooperative Control/ Multi-Agent System

Research Experience

[demos & more projects](#)

- Learning of quadrupedal robot locomotion and planning under uncertainty over it** | *CMU* Aug'22-present
 - Trained a quadrupedal robot to exhibit parkour locomotion skills such as running, climbing and jumping via Deep-RL in Isaac Gym. Working on risk-aware policies that would be used by the global planner to control stability.
- Multi-Object Tracking for Recycling Facility Automation** | *Staff, Biorobotics Lab* May'21-May'22
 - Led a five-member team in automating the Gateway Recycling Facility, Pittsburgh.
 - Implemented a YOLO-based object detection system to accurately identify various materials on a conveyor belt, complemented by DeepSORT for robust tracking. Leveraged Kalman filtering for precise state estimation, enabling re-identification across disparate camera views.
- Controls and Perception Researcher**, *Contextual Robotics Institute, UCSD* Nov'19-March'20
 - Tested and modified AUTOWARE (an open source ROS-based software for autonomous driving) on Polaris GEM. Involved in the development of steering and throttle control based on the kinematic model.
 - Developed a new approach to predicting driving attention maps which not only uses raw human gaze information, but also learns to detect the scene semantics directly. We showed that such combined attention mechanism serves as a powerful tool to focus on the relevant regions in an image frame in order to make driving both safe and efficient.
- Masters' thesis**, *Gravish lab, UC San Diego* Sept'18 - June'20
 - Built a novel underactuated micro-gripper that facilitates mobile micro-robots in performing pick and place tasks. Developed a closed-chain linkage mechanism that allows the gripper to bend down and grasp objects simultaneously. Performed the kinematic and static analysis of the gripper.

Work Experience

- **Teaching Assistant:** Visual Learning and Recognition (Spring'24) CMU
Intro to Autonomous Driving|Computer-aided Analysis & Design|Fundamental of Solid Mechanics UCSD

Publications

1. Anwesan Pal, **Sayan Mondal**, Henrik I. Christensen, "Looking at the right stuff"- Guided semantic-gaze for autonomous driving, *IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2020.*
2. **Sayan Mondal**, "Design and analysis of a kirigami-based two-finger microgripper", *MS thesis, 2020.*

Skills

- Programming: Python, C++, CMake, CUDA, Java, Julia, MATLAB, Scripting(Bash)
- Robotics: Isaac Gym, MuJoCo, Gazebo, MoveIt, Fusion360, OpenCV, ROS, PyTorch, Simulink