SAHIL T CHAUDHARY

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EDUCATION

Carnegie Mellon University *Pittsburgh, PA*

Master of Science in Mechanical Engineering – Research | **GPA:** 4.0/4.0 *May 2025*

- **Relevant coursework:** Optimal Control and Reinforcement Learning (ongoing), Robot Localization and Mapping (ongoing), Modern Control Theory, Machine Learning and Artificial Intelligence for Engineers, Robot Dynamics and Analysis, Computer Vision for Engineers

Vellore Institute of Technology *Vellore, India*

Bachelor of Technology in Mechanical Engineering | **GPA:** 9.05/10.0 *May 2022*

- **Relevant coursework:** Robotics, CAD/CAM, Design of Machine Elements

SKILLS

Knowledge Areas: Controls | Planning | Simultaneous Localization and Mapping | Robot Dynamics | Machine Learning | Computer Vision | Computer-Aided Design | Mechanical Design | 3-D Printing

Tools and Software: C++ | Python | Git | ROS | MATLAB | SolidWorks | Ansys | Fusion 360 | CoppeliaSim (V-REP)

RESEARCH EXPERIENCE

Biorobotics Lab *Pittsburgh, PA*

Graduate Research Assistant *August 2023 – Present*

- Redesigned the payload of RC Cars and a Quadruped Robot that are part of a heterogenous convoy to improve performance and serviceability
- Made the payload **20% lighter**, more compact, and easily accessible to ensure serviceability by using Delrin and making the payload modular
- Reduced **Centre of Gravity by 10%** by decreasing the height of the payload, hence improving cornering performance of the RC cars
- Incorporated sensors, including LIDAR, IMU, and two cameras, along with the on-board computer, motor controller, and circuit boards while ensuring optimal field of view of the sensors

WORK EXPERIENCE

Carnegie Mellon University's College of Engineering *Pittsburgh, PA*

Course Assistant for Machine Learning and Artificial Intelligence for Engineers *January 2024 – Present*

- Assisted Professor L. Burak Kara in teaching machine learning and artificial intelligence principles to graduate students

ArcelorMittal Nippon Steel India Limited *Hazira, India*

Graduate Engineer Trainee – Corex Operations *June 2022 – March 2023*

- Ensured the smooth running of different processes such as conveyors, skip charging, coal blending, coal drying, slag granulation plant, and machinery involved in all the areas within Material Handling and the Corex Process
- Assisted and collaborated with Field Engineers to resolve problems such as malfunctioning, errors, or issues with the equipment and machinery, ensuring the safety and productivity of the Plant

PROJECTS

Model Predictive Path Integral Control *Pittsburgh, PA*

Carnegie Mellon University – Course Project *Spring 2024*

- Implementing MPPI on an RC car using C++ and ROS to enable aggressive driving
- Testing it on an RC car to demonstrate the performance difference between MPPI and an iLQR controller

Point-LiDAR Inertial Odometry *Pittsburgh, PA*

Carnegie Mellon University – Course Project *Spring 2024*

- Implementing Point-LIO using C++ and GTSAM to overcome the drawbacks of frame-based LiDAR processing
- Testing it on an RC car to demonstrate the speed and accuracy of the approach

Re-sizeable Autonomous Cleaning Robot [GitHub] *Vellore, India*

Vellore Institute of Technology – Final Year Project *Spring 2022*

- Led a team of three to design and develop a Cleaning Robot that can re-size itself (**between 30 cm and 50 cm in length**), using Fusion 360
- Conducted a simulation study using Ansys and CoppeliaSim (V-REP) to demonstrate proof of concept
- Developed a physical prototype using Raspberry Pi 4, and programmed it using Python

Prosthetic Arm [GitHub] *Vellore, India*

Vellore Institute of Technology – Course Project *Spring 2021*

- Fabricated a cost-effective Prosthetic Arm using SolidWorks, Arduino Uno, and 3-D printing (using PLA)
- **Reduced the material cost** of the Prosthetic Arm by **18%** using Topology Optimization
- Programmed the arm using an Electromyography Sensor and C++