

Satrajit Chatterjee

MSE IN ROBOTICS · UNIVERSITY OF PENNSYLVANIA

Philadelphia · Pennsylvania

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Education

University of Pennsylvania

Philadelphia, Pennsylvania

MASTER OF SCIENCE IN ENGINEERING - ROBOTICS

August 2023 - Present

Grasp Lab, Advisor - Pratik Chaudhari

Technical Skills

Programming Languages

PYTHON, C/C++, JAVA, KOTLIN, DART, JAVASCRIPT, SQL

Areas & Frameworks

- **ROBOTICS, MACHINE LEARNING & STATISTICAL ANALYSIS** (ROS, PYTORCH, RAY, RLLIB, GYMNASIUM, STABLE-BASELINES, TENSORFLOW, KERAS)
- **WEB DEVELOPMENT & DBMS** (FLASK, DJANGO, MONGODB, MYSQL)
- **APP DEVELOPMENT** (FLUTTER, ANDROID STUDIO, GOOGLE FIREBASE)
- **GENERAL** (GIT, DOCKER, UNIX)

Work Experience

AWS AI - DeepRacer

Santa Clara, California

SOFTWARE DEVELOPMENT ENGINEER I

May. 2022 - Present

- Developing E2E RL pipeline for training in-sim and inference on physical racetracks with custom algorithms and/or reward functions.
- Developed automated experimentation pipeline based on trajectory consistency for efficient physical track testing.
- Developed automated off-track detection and stopping of the DeepRacer car for improved pit-crew efficiency during physical races.

The AirLab, Robotics Institute - Carnegie Mellon University

Pittsburgh, Pennsylvania

RESEARCH ASSOCIATE II | ADVISOR - SEBASTIAN SCHERER

Jun. 2021 - Apr. 2022

- Developed sampling-based informative path planner for long horizon search and tracking.
- Developed simulation environment to test and evaluate information gathering using above mentioned planner.
- Team lead for MBZIRC Maritime Grand Challenge in Abu Dhabi, representing the CMU team in collaboration with Lockheed Martin.

Cushion AI

San Francisco, California

MACHINE LEARNING ENGINEER

May 2021 - Jun. 2021

- Reimplemented batch jobs with more efficient code, & better resource provisioning on AWS cloud to reduce annual bills by 5%.
- Migrated bank institutions in database from MX Atrium to Plaid to achieve tighter integration of bank services & the Cushion platform.
- Implemented unit-testing for database migration scripts as well as for new code, increasing code coverage by 20.

NASA Jet Propulsion Laboratory – Group 347J

Remote

RESEARCH INTERN | ADVISOR - SHREYANSH DAFTRY

Oct. 2020 - April 2021

- Developed context-aware adaptive algorithm selection using deep learning for motion planning.
- Created new dataset of auto-generated obstacle maps that simulate Martian terrain.
- Reduced planning time by an average of 8% and path cost by an average of 14% over baseline.

Multicomp Lab, Language Technologies Institute - Carnegie Mellon University

Pittsburgh, Pennsylvania

RESEARCH INTERN | ADVISORS - AMIR ZADEH, LOUIS-PHILIPPE MORENCY

May 2019 - Aug. 2020

- Designed and developed CNN algorithms using asymmetric correlations for Facial Action Unit Detection.
- Designed custom loss function using Jaccard coefficient correlations to train a novel neural network to improve Action Unit detection.
- Improved overall F1 classification score by an average of 11% across all AUs compared to baseline on BP4D dataset.

Publications

IROS'22 TIGRIS: An Informed Sampling-based Algorithm for Informative Path Planning, Published

The AirLab, CMU

Projects

NeuralMusicSynth

Pittsburgh, Pennsylvania

TENSORFLOW, PYTHON

Sep. 2021 - Jan. 2022

- Worked on developing automated music generation using a Variational Auto Encoder as a hobby project.
- Generated 16 measure piano roll MIDI's from a dataset of 600K+ measures from 36K+ songs from web-scraped 8-bit video game music.
- Trained network to learn a sparse latent space representation of 120 features using reconstruction loss.