

Sean Sun

✉ seansun@cmu.edu 🌐 seansun.dev 📄 github.com/SeanSun6814 📞 (707) 710-5802

EDUCATION

Carnegie Mellon University | B.S. in Computer Science | Machine Learning Concentration GPA: 4.00 / 4.00 June 2025
Selected Coursework: Multimodal Machine Learning, Intermediate Deep Learning, Intro to Machine Learning, Deep RL (ongoing), Human Information Processing and Artificial Intelligence, Functional Programming, Theoretical Computer Science

EXPERIENCE

Software Engineer Intern | Tesla Inc. 2023

- Designed new multiprocessing framework to monitor real-time vehicle diagnostic data (10,000 messages/sec)
- Developed new Python SQL API empowering teams to conduct big-data analysis on vehicle historical performance data
- Created Kubernetes cronjobs to detect and aid mitigation of common vehicle failures
- Engineered a SvelteKit collaborative vehicle diagnostic website to analyze large log files and to assist automatic diagnostics

Machine Learning Intern, Project Lead | Carnegie Mellon University AirLab 2022 - 2024

- Trained multiple LSTM/Transformer models to learn motion patterns of robots for IMU Odometry
- Enhanced and optimized the SuperOdometry SLAM algorithm in challenging tunnel environments
- Calibrated RGB and thermal-IMU sensor for multiple robots
- Led React app development to process multi-robot, multi-sensor, multi-degraded datasets for ICCV 2023 SLAM challenge
- Project lead, full-stack web developer for www.superodometry.com (superodometry.com/iccv23)

Machine Learning Intern | BGI Genomics 2019

- Conducted bioinformatics research. Built random forest ML models that predict genetic mutations of diseases
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PROJECTS

Multimodal Machine Learning Researcher | Carnegie Mellon University MultiComp Lab 2023

- Utilized high-level plans in LLM chain-of-thought few-shot in-context learning to perform complex web tasks in WebArena
- Adapted large multimodal model (LLaVA-v1.5-13B) for visual-language reasoning on web navigation tasks
- Finetuned LMs (DeBERTa) for element candidate filtering, decreased required LLM context size by 10x at > 90% accuracy
- Deployed finetuned LLM (Mistral 7B) using FastChat framework on Nvidia A100 GPU

Machine Learning Researcher, Project Lead | Shanghai Eye and ENT Hospital, Fudan University 2023

- Trained SimCLR, MixMatch, FixMatch models on sparsely-labeled medical OCT images for prediction of BCVA values

Software Simulation Team Lead | Carnegie Mellon University DomeRanger Moon Rover Project 2022

- Led team to simulate interaction between rover and lunar granular terrain using Project Chrono simulator (C++)
(seansun.dev/chronosim)

Controls Software Engineer | Carnegie Autonomous Racing Team 2022

- Designed and tuned model-based controllers driving the vehicle using MATLAB
- Performed motor system identification and integrated motor controller with software system

Programming Team Captain | First Robotics Competition 2018 - 2021

- Led team to build 3 robot electrical systems and robot codes (2 qualified for the FRC Houston World Championship)
- Developed 4 different autonomous driving algorithms using PID, motion profiling, pure pursuit, and a holonomic controller
- Constructed Unity autonomous robot simulator environment to practice programming (seansun.dev/robotsim)
- Creator of programming Video Tutorial Series (seansun.dev/0ToAuto). 6-episodes, 1400+ subscribers, and 100k+ views

Machine Learning Researcher | Pioneer Academics 2020

- Authored paper: *A Novel Method Using Node2vec, KPCA, and Random Forest to Predict Genes Related to Parkinson's Disease*
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SKILLS

Languages: Python, JavaScript, Java, C++, C, C#, SML, Go, HTML, CSS

Technologies: PyTorch, TensorFlow, React, SvelteKit, GitHub, Linux, ROS, Unity, CMake, Electron, Kafka, Docker, Kubernetes

AWARDS

- Carnegie Mellon University School of Computer Science: Dean's List, High Honors (2021, 2022, 2023)
- USA Computing Olympiad: 2020 Jan Gold Contest. Ranked 42/851 – International level (2020)
- FRC World Championship: Gracious Professionalism Award – International level (2019)
- FRC Sacramento Regional: Dean's List Finalist Award – Regional level (2020)
- FRC Monterey Bay Regional Winners. Ranked 4/36 teams – Regional level (2019)