Sean Sun

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EDUCATION

Carnegie Mellon University | B.S. in Computer Science | Machine Learning Concentration   May 7, 2025
4.00 / 4.00 GPA | **Courses:** Deep Learning · Multimodal ML · Gen AI · Deep RL · ML Systems · Operating Systems · Cloud Computing

EXPERIENCE

Software Engineer Intern | **Microsoft**   2024
- Contributed to high-impact team developing Microsoft Intune, serving 100+ million daily active users
- Engineered distributed cache system for API calls, enhancing performance and reducing operational costs by 30%
- Led the migration from Azure Active Directory API to Microsoft Graph API, ensuring minimal disruptions
- Piloted the migration of Intune policies to Microsoft Settings Catalog, improving efficiency of adding new policies

Software Engineer Intern | **Tesla**   2023
- Designed new multiprocessing framework to monitor real-time vehicle diagnostic data (10k+ packets/sec)
- Developed Python programs empowering teams to conduct big-data analysis on vehicle historical performance data
- Engineered a SvelteKit collaborative vehicle diagnostic website to analyze large log files and to assist automatic diagnostics

Software Engineer 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
- Led the processing of SLAM datasets. Published at ICCV 2023, CVPR 2024. (superodometry.com/iccv23, seansun.dev/cvpr24)

Machine Learning Intern | **BGI Genomics**   2019
- Conducted bioinformatics research. Built random forest ML models that predict genetic mutations of diseases

PROJECTS

Deep Learning Library From Scratch   2024
- Implemented PyTorch-inspired library with CPU & GPU backend (Python, C++, CUDA) from scratch supporting ResNet, RNN, Transformer

Co-Founder, Developer | **AI Interactive English Tutor App**   2024
- Developed full-stack app leveraging Llama3-70B and TTS models to deliver real-time, AI-powered English conversation lessons

Multimodal Machine Learning Researcher | **Carnegie Mellon University MultiComp Lab**   2023
- Adapted large multimodal model (LLaVA-v1.5-13B) for visual-language reasoning on web navigation tasks in WebArena
- Fined-tuned LMs (DeBERTa) for element candidate filtering, decreased required LLM context size by 10x at > 90% accuracy
- Deployed fined-tuned 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 Moon Rover Project**   2022
- Led team to simulate interaction between rover and lunar granular terrain using C++ Project Chrono simulator (seansun.dev/chronosim)

Programming Team Captain | **First Robotics Competition**   2018 - 2021
- Led team to program 3 robots (2 qualified for the FRC Houston World Championship)
- Developed 4 different autonomous driving algorithms using PID, motion profiling, pure pursuit, and a holonomic controller
- Creator of programming Video Tutorial Series. 6-episodes, 1400+ subscribers, and 100k+ views (seansun.dev/0ToAuto)

SKILLS

Languages: Python · Java · JavaScript · C# · C · C++ · Go · Rust · CUDA · SQL
Technologies: PyTorch · React · Git · Linux · CMake · Docker · Kubernetes · MongoDB · Unity · Electron · Kafka

AWARDS

2024 – 2021	• Carnegie Mellon University School of Computer Science: **Dean's List, High Honors**
2020	• **USA Computing Olympiad**: 2020 Jan **Gold Contest**. Ranked 42/851 – International level
2020	• FRC Sacramento Regional: **Dean's List Finalist Award** – Regional level
2019	• FRC World Championship: **Gracious Professionalism Award** – International level
2019	• FRC Monterey Bay **Regional Winners**. Ranked 4/36 teams – Regional level