Shihao Cao

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It is only with the heart that one can see rightly – Antoine de Saint-Exupéry

EDUCATION

CORNELL UNIV.
GPA: 3.95 / 4.0
Computer Science
Dec 2022 | Ithaca, NY

THOMAS JEFFERSON HS FOR SCI/TECH
GPA: 4.56 / 4.0
Jun 2019 | Alexandria, VA

LINKS

Website:// **shihaocao.com**
LinkedIn:// **shihaocao**
Github:// **shihaocao**
Twitter:// **shihao_cao**

COURSEWORK

OS + Prac. (CS 4410)
Compilers + Prac. (CS 4120)
Computer Arch. (ECE 4750)
Adv. Systems (CS 6410)
Algorithms (CS 4820)
Adv. ML Systems (CS 6787)
Intro ML (CS 4780)
Numerical Comp. (CS 4220)
Computer Sys. (CS 3410)
Computer Vision (CS 4670)
Functional Progr. (CS 3110)
Discrete Math (CS 2800)
OOP & DataS. (CS 2110)
Probability (MATH 4710)

HIGH SCHOOL:
ML • CV • AI • Robotics
Linear • DiffEq • MultiVar
Quantum Mechanics

SKILLS

PROGRAMMING
4+ years experience:
Python • Java • C++
HOOTL/HITL Testing
RC Aircraft *(Design, Build, Pilot)*
Embedded SW • Sensors
I2C • Serial • Arduino
Simulation • Flight Software
OpenCV *(Python and C++)*
Experienced:
C • Scikit-learn • NumPy
Prometheus • Networking

HOBBIES

Photography • Longboarding
RC Aircraft • Tinkering

EXPERIENCE

SPACEX | Starlink Software Engineer (Direct-to-Cell Core Network)
Jan 2024 - Now | Sunnyvale, CA
- Owned and built Wireless Emergency Alerts and Location Services for DTC Core Network
- Architect-ed and built the entire HOOTL integration testing infra using async Python
- Eliminated issues and helped scale users from 0 to 1000's with T-Mobile, OneNZ and KDDI

ORCHARD ROBOTICS | Co-Founder and CTO
Nov 2022 - Dec 2023 | Ithaca, NY
- Lead 2 engineers and 4 interns, developing a Nvidia Jetson-based Orchard Vision System
- Built 15+ systems to scan thousands of acres, yielding within 5% accurate fruit counts & sizes
- Architected image stitching pipeline to tag each fruit to within 1m of its tree
- Deployed weekly to 7 Orchards across the US to develop and test with farm managers on site
- Raised 3.8M seed round with CEO backed by General Catalyst

JUMP TRADING | Software Engineering Intern
Jun 2022 - Aug 2022 | Chicago, IL
- Built custom cache aware low latency (ns range) high rate (10Gbps+) stats framework in C++
- Architected data flow thru 100+ apps, 10+ hosts, shared mem, databases, and frontends
- Deployed stats framework into two production clusters, 10x-ing existing stats data flow

SPACEX | Starship Flight Software Intern
Jun 2021 - Aug 2021 | Hawthorne, CA
- Upgraded inter-process data sharing, deprecating 2 relay systems and 40+ config files
- Owned, and supported inter-process data sharing for flight software (200+ devs)
- Architect-ed flight software abort relay verification system, catching 4 critical bugs
- Optimized generation speed by 100x through data caching and multi-threaded workflows

SPACEX | Vehicle Engineering Intern
May 2020 - Aug 2020 | Hawthorne, CA
- Responsible for production landscape and engineering of two valves on Falcon 9 and Merlin
- Iterated design and process to eliminate 90% of rebuilds, doubling production rate

RESEARCH AND TEAMS

SPACE SYSTEMS DESIGN STUDIO - PAN TEAM | Co-Lead
Sept 2019 - May 2022 | Ithaca, NY
- Spearheaded software development for the Pathfinder for Autonomous Navigation (PAN) project, two 3U Cube Satellites which will autonomously rendezvous and dock in LEO
- Developed C++ drivers and flight software for attitude control pipeline and GPS
- Devised HITL/HOOTL tests to validate drivers, state-machines, and hardware

TJ UNMANNED AERIAL VEHICLE TEAM | President + Founder
Sept 2017 – Jun 2019 | Alexandria, VA
- In one year, lead team of 20 to design and build **the 2019 fixed-wing UAV** for **SUAS**
- Spearheaded flight software, power system, CONOPS, and mech. design/manufacturing

PERSONAL PROJECTS

7FT 7IN TOWER OF CARDS | May 2022
I wanted to build something I remembered being amazed by as a child – **a massive tower of cards**

ELECTRIC STARSHIP HOPPER | May 2020
With a partner, we designed and built an **electric VTOL drone** with single point vectored thrust.
I designed the vehicle, wrote the C++ flight software, sensor/action pipeline, and telemetry flow

REMOTE CONTROL F-86 SABRE | May 2018
I designed, built and flew a 700mm wingspan **RC F-86 Sabre** powered by an an electric ducted fan.