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Shihao Cao

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To build anything real, we have to build something an order of magnitude larger to breathe life into it

EDUCATION

CORNELL UNIV.

GPA: 3.95 / 4.0
Computer Science
May 2023 | 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)
Numerical Comp. (CS 4220)
Computer Sys. (CS 3410)
Computer Vision (CS 4670)
Functional Progr. (CS 3110)
Discrete Math (CS 2800)
OOP & DataS. (CS 2110)
Abstract Alg. (MATH 3340)
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
TensorFlow • InfluxDB

HOBBIES

Photography ***(Street, Portrait)***
UrbEx • Longboarding

EXPERIENCE

JUMP TRADING | Software Engineering Intern

Jun 2022 - Aug 2022 | Chicago, IL

- Built custom cache aware low latency (<42ns) high rate (9.6Gbps+) stats framework in C++
- Architected data flow thru 200+ apps, 8 hosts, shared mem, Telegraf, InfluxDB, and Grafana
- 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)
- Restructured GNC->FSW->Network data flow for new distributed compute architecture
- 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

EXOANALYTIC SOLUTIONS | Systems Engineering Intern

Jun 2018 - Aug 2018 | July 2019 - Aug 2019 | Reston, VA

- Built a RF satellite detector and a RF/CV drone detector in one month and two months
- Iterated designs 4x across both platforms to drop cost by 2x and compute reqs. by 10x

RESEARCH AND TEAMS

SPACE SYSTEMS DESIGN STUDIO - PAN TEAM | Co-Lead

Sept 2019 - Current | 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

CORNELL DATA SCI - SELF DRIVING CAR | Team Lead + Social Chair

Jan 2021 - Current | Ithaca, NY

- Founded and now leading a team of 7 to build a webcam based car autopilot system
- Architect-ed Python control loop to integrate CV, SLAM, and actuators on a Linux platform

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

TJ NANOSATELLITE TEAM | Full Team Lead

Sept 2016 – Jun 2019 | Alexandria, VA

- Managed development of **TJREVERB**, a 2U communications satellite
- Spearheaded development and architecture of Python flight software, testing, and CONOPS

PERSONAL PROJECTS

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, and wrote the C++ flight software, and sensor/data pipeline.

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.