Last Updated on 24th July 2022

Shihao Cao

shihaocao.com | shihaocao@gmail.com

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

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

COURSEWORK

Analysis of Algorithms
ML • CV • AI
Adv. ML Systems
Operating Systems
Compilers
Numerical Comp. & Analysis
Computer Systems & Arch.
Functional Programming
Discrete Mathematics
OOP & Data Structures
Quantum Mechanics
Mathematical Physics
Linear Algebra
Differential Equations
Multivariable Calculus

SKILLS

PROGRAMMING

4+ years experience:
Python • Java • C++
OpenCV ***(Python and C++)***
HOOTL/HITL Testing
Simulation • Flight Software
Experienced:
C • Scikit-learn • NumPy
TensorFlow • Elasticsearch
Flask • NodeJS • Linux

ROBOTICS

4+ years experience:
RC Aircraft ***(Design, Build, Pilot)***
Autonomous Vehicles
Prototyping • Sensors

HOBBIES

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

EXPERIENCE

JUMP TRADING | Software Engineering Intern

Jun 2022 - Present | Chicago, IL

- Developed and deployed low latency high bandwidth stats framework using shared memory

CONTRARY CAPITAL | Venture Partner

Oct 2021 - Present

- Grew a community of 50+ founders at Cornell, and sponsored events and hackathons
- Scouted and funded one seed-stage startup. Advised teams in robotics, FSW, and logistics

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
- Performed root cause analysis of valve failures to iterate design and prevent recurring issues
- Implemented process improvements to eliminate 90% of rebuilds, doubling production rate

EXOANALYTIC SOLUTIONS | Systems Engineering Intern

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

- Owned and delivered deployable satellite detector from concept to product in one month
- Owned and delivered deployable drone detector from concept to product in 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
- Simulated spacecraft sensors and dynamics in software to verify control algorithms

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 mechanical design

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 framework.

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.