Shihao Cao

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EDUCATION

CORNELL UNIVERSITY
Incoming Freshman | Ithaca, NY

THOMAS JEFFERSON HS FOR SCI/TECH
Jun 2019 | Alexandria, VA
GPA: 4.558 / 4.0

LINKS

LinkedIn:// **shihaocao**
YouTube:// **Shasty88**
Github:// **Shasty88**
Facebook:// **shihao.cao.5**

COURSEWORK

HIGH SCHOOL
Quantum Mechanics & Electrodynamics
Multivariable Calculus
Advanced Math Techniques
Computer Vision
Artificial Intelligence
Energy Systems *(Research)*
Robotics & Prototyping
AP Physics C Mech. and E/M
AP Computer Science A
AP Calculus BC
AP Chemistry

SKILLS

MECHANICAL
Design Software:
Fusion 360 *(CAD & CAM)* • AutoCAD
ANSYS Fluent • Autodesk CFD
Mathematica • Matlab
Hardware:
CNC Mill, Router & Lathe
MIG Welding *(Steel & Aluminum)*
Laser Cutter • 3D Printing
Fine Woodworking • Metal Casting
Band Saw • Table Saw • Drill Press

ROBOTICS
5+ years experience:
RC Aircraft *(Design, Construction and Piloting)*
2+ years experience:
Raspberry Pi • Flight Computers
Mission Planner • Arduino
MAVProxy • DroneKit

PROGRAMMING
2+ years experience:
Python • Shell • Java • C++ • GitHub
OpenCV *(Python and C++)* • Linux

EXPERIENCE

EXOANALYTIC SOLUTIONS | Intern
Jun 2018 - Aug 2018 | Reston, VA
- Researched cost effective RF and Visual drone detection solutions.
- Rapid prototyped a fully operational deployable drone detector prototype.

KASHMIR ROBOTICS | Intern + Test Pilot + Instructor
Oct 2016 – May 2018 | Great Falls, VA
- Researched computer vision for aerial imaging and machine learning.
- Primary test pilot for fixed wing and multirotor prototypes.
- Built multiple Pixhawk based custom multirotors.
- Operated autonomous missions using Mission Planner and QGroundControl.

CLUBS

TJ UNMANNED AERIAL VEHICLE TEAM | President + Founder
Sept 2018 – Present | Alexandria, VA
- Lecture students on programming, CAD, electronic and aerodynamics.
- Spearhead and manage development of **fixed wing UAVs** for **AUVSI SUAS**
- Instruct students on how to fly RC aircraft and operate UAVs.

TJ NANOSATELLITE TEAM | Project Manager + Systems Engineer
Sept 2016 – Present | Alexandria, VA
- Manage development of **TJREVERB**, a 2U communications satellite.
- Spearhead development of VHF radio and Python OS software.
- Primary hardware and software integrator.

TJ FIRST ROBOTICS COMPETITION TEAM | Team Member
December 2018 – Present | Alexandria, VA
- Worked on object grabbers and launchers.
- Led rapid prototyping team for elevator systems.

PERSONAL PROJECTS

THRUST VECTORING EDF VERTICAL ROCKET LANDER | Jan 2018
I designed and built a **thrust vectoring system for an EDF** (Electric Ducted Fan). I used a 90mm EDF with a 6S Li-Po and a 100A ESC. The system delivers about 4 pounds of thrust and has a 1.2 thrust to weight ratio capable of hovering.

REMOTE CONTROL F-86 SABRE | May 2018
I designed, built and flew a 700mm wingspan **RC F-86 Sabre** powered by a 12 blade 64mm EDF, 4S Li-PO and a 80A ESC. I used Fusion 360, AutoCAD, and Autodesk CFD to do the design work. I've outlined my project on my website and YT.

ELECTRIC LONGBOARD | Jun 2015
I built an **electric longboard** powered by a brushless motor and Li-Po batteries. It's capable of accelerating up to 25 kph up a 20-degree incline and has a 5km range.

AWARDS

Year		Award
2019	Regional	HackTJ 2019 Best Hardware Hack
2019	Finalist	FIRST Robotics Competition CHS District Blacksburg
2017	Regional	HackTJ 2017 Fannie Mae Award
2016	2nd/425	Freshman Robot Speed Design Challenge
2016	1st/24	Freshman Impossible Robot Design Challenge