Haicheng Charles Zhao

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Education & Relevant Coursework

Princeton University, *2017 – 2021*, GPA: 4.0
Concentrating in Computer Science with a Finance Certificate
Algorithms & Data Structures, Programming Systems, Microeconomic Theory, Statistics, Advanced Linear Algebra, Multivariable Calculus

Thomas Jefferson High School for Science and Technology, *2013 – 2017*
SAT (new): 1600
Artificial Intelligence, Parallel Computing, Web & Mobile App Development, AP Micro- & Macroeconomics

Languages & Technologies

General Purpose: Python • Java • C • C++
Web Development: Javascript/ES6 • jQuery • SCSS • React • Redux • Django • Flask • Jekyll
Other: Git • Linux • R • OpenCV • ROS • LaTeX • MPI • OpenMP • ANTLR • Messenger Platform

Experience

Computer Science and Mathematics Division Intern, **Oak Ridge National Laboratory** *May 2018 – August 2018*
- Wrote compilers with ANTLR and C++ to compile the IBM OpenQASM, Rigetti Quil, and ProjectQ quantum languages to the Eclipse XACC intermediate representation. Updated ANTLR grammars for OpenQASM and Quil, and wrote a grammar for ProjectQ.
- Wrote a modular command line admin interface (CLI) in Python for Profiles, the lab's new internal website similar to LinkedIn that allows researchers to create multiple "targeted" profiles. The CLI scrapes web data sources to pre-fill researcher information, and also allows an admin to perform low-level and high-level CRUD operations with the Java Spring back-end.

Software Engineer, **PrepFactory** *June 2017 – January 2018*
- Convinced founder to let me code after learning React and Redux and developing prototype for new feature over weekend.
- Collaborated with startup founder to design a new clean and interactive UI for practice tests, and then developed a web app implementing these practice tests, now used throughout the website.
- Developed an adaptive diagnostic test algorithm that quickly estimates a score range and confidence level on the ACT.
- Managed several other interns throughout this project.

Technology and Finance Lead, **TJ Intermediate Open in Informatics** *November 2016 – June 2017*
- Organized and ran TJ IOI, a seven-hour high school programming competition in which eight teams competed.
- As Technology Lead, created a restricted Linux virtual machine on which participants programmed.
- As Finance Lead, managed a team that contacted companies and acquired over $2,000 for shirts, food, facilities, and prizes.

Co-Captain, **Senior Computer Team** *September 2016 – June 2017*
- Wrote and gave lectures on algorithms, especially those tested in the USA Computing Olympiad (USACO), at weekly 40-minute meetings.
- Held contests and selected teams to participate in programming competitions.

Technical Projects

AIM Robotics FIRST Robotics Competition (FRC) Team, Lead Programmer *November 2016 – June 2017*
- Persuaded team to scrap all old code, and designed a structured, modular software framework with continuous integration.
- Implemented accurate self-correcting driving using several layers of feed-forward PID controllers in Python.
- Used PID controllers and computer vision with OpenCV to implement an autonomous phase where the robot could reliably locate a rod, drive to it, and release a gear onto it.
- Won Innovation in Control Award.

Solace: Exploratory Autonomous Vehicle Research Project *September 2016 – June 2017*
- Built a 1/8th-scale R/C car mounted with various sensors and programmed it using the Robot Operating System (ROS) and Python to drive autonomously to a specified location, through both known and unknown areas.
- Designed novel method for dynamically determining the optimal path through both known and unknown areas by coupling Adaptive Monte Carlo Localization (AMCL) with the Gmapping SLAM algorithm using image stitching.

AlexaBot *March 2016 – July 2016*
- Developed Facebook Messenger bot that lets a user interact with Amazon Alexa remotely through text rather than speech.
- Wrote bot in Python using Tornado while Messenger Platform was still in beta.
- Bot has had more than 2000 users, and we ensured reliable uptime and quick bug-fixing during its increase in popularity.

Awards & Achievements

3rd Place in National Economics Challenge Adam Smith Division *May 2017*
Selected as one of top four from my school. First time my school has made it to the national round of this competition, in which more than 11,000 students participated.

2nd Place in VCU High School Programming Contest *March 2017*
Won 2nd place out of 40 teams in this algorithms contest hosted by Virginia Commonwealth University.

MIT Beaver Works Summer Institute *August 2016*
Selected as one of 40 students nationwide to participate in this 4-week program concerning autonomous vehicles. At end of program, selected by faculty as most likely to be an "Inventor of Something Big."