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, Probability Theory, Statistics, 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: Python • Java • C • C++
Web: Javascript/ES6 • jQuery • SCSS • React • Redux • Django • Flask • Jekyll
Other: Git • Linux • R • OpenCV • ROS • TensorFlow • 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 parse and 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 sources to pre-fill researcher information and allows an admin to perform low-level and high-level CRUD operations with the Java Spring backend.

Software Engineer, **PrepFactory** *June 2017 – January 2018*
- Convinced founder to let me code after learning React and Redux and developing a feature prototype over a 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 acquired over $2,000 from companies 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, at weekly 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 architecture with continuous integration.
- Implemented accurate self-correcting driving in Python and used computer vision with OpenCV to implement autonomy.
- Developed a dashboard with Electron displaying various information from the robot, including the results of my computer vision code and data from sonar sensors. The dashboard also allows remote configuration of the robot.
- Won Innovation in Control Award and made it to District Championships for first time in team's history.

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 users 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

Shapiro Prize for Academic Excellence *September 2018*
This prize is awarded to top-performing Princeton freshmen and sophomores based on their academic record, taking into account the range, depth, and difficulty of their academic program.

3rd Place in National Economics Challenge Adam Smith Division *May 2017*
Selected as one of top four from my school to compete in the national semi-finals and then finals in New York. First time a team from Virginia has made it to the final round of this competition, in which more than 11,000 students participated.

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."