# Haicheng Charles Zhao

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## Education

**Princeton University, 2017 – 2021**
Studying Computer Science

**Thomas Jefferson High School for Sci and Tech**
GPA: 4.523 (weighted), 4.0 (unweighted)
SAT (new): 1600

## Languages and Technologies

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

## Work and Volunteer Experience

**PrepFactory Intern** *Summer 2017*
- Worked personally with startup founder to design an adaptive diagnostic test that quickly determines an estimated score range and confidence level for a student's performance on the ACT.
- Learned React and Redux over a weekend and then developed a web app implementing this diagnostic test using React and Redux.

**Student Systems Administrator** *Fall 2015 – Spring 2017*
- Added capabilities and options to my high school's web printing system.
- Administered posts by students and faculty to my school's Intranet.
- Set up and maintained school's systems (e.g. storage array, websites).

**TJ IOI Technology and Finance Lead** *Fall 2016 – Spring 2017*
- Organized and ran TJ IOI, a seven-hour programming competition for high school students.
- As Technology Lead, created a restricted Linux virtual machine on which participants programmed.
- As Finance Lead, acquired over $2000 for shirts, food, facilities, and prizes.

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

## Projects

**AIM Robotics FIRST Robotics Competition (FRC) Team, Lead Programmer** *Fall 2016 – Spring 2017*
- Designed a structured, modular software framework from scratch linking subsystems with commands.
- Implemented accurate, precise self-correcting driving using several layers of feed-forward proportional-integral-derivative (PID) controllers.
- Used PID controllers and computer vision with OpenCV to implement an autonomous phase where the robot could locate a rod, drive to it, and release a gear onto it.
- Won Innovation in Control Award.

**Solace: An Exploratory Autonomous Vehicle** *Fall 2016 – Spring 2017*
- Built a 1/8th-scale car mounted with various sensors and programmed it using the Robot Operating System (ROS) to drive autonomously to a specified location, through both known and unknown areas.
- Coupled the Adaptive Monte Carlo Localization (AMCL) and Gmapping simultaneous localization and mapping (SLAM) algorithms using image stitching to dynamically determine the optimal path through both known and unknown areas.

**Epochs: A Time Management App** *Summer 2017 – Present*
- Using React and Redux to develop a web app that allows users to micromanage their time.
- Implementing a Progressive Web App (PWA) with offline capabilities and ability to give notifications using service workers.

## Awards and Achievements

**1st Place in IDT Programming Contest** *March 2016*
Developed a package delivery tracking web app and won $1500 for school, as well as received tablets.

**Best Website at HackTJ 2016** *February 2016*
Developed website that teaches Mandarin definitions and pronunciations. Best website out of 120 teams.

**2nd Place in VCU High School Programming Contest** *March 2017*
Solved various algorithms problems in this contest hosted by the Virginia Commonwealth University.