Qingyuan (Andy) Li

Computer Science & Mathematics Student

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🔗 **Github Profile**

🔗 **Website**

Personal Skills

Communication

Leadership+Teamwork

Strong Organization

Technical Skills

CS Algorithms

Control Theory

Web & Application Design

Data Science

Machine Learning

Computer Vision

Languages

Java

Python

C/C++

HTML/CSS/JS

Frameworks

Git/Github

Tensorflow+Numpy

LibGDX/LWJGL

UNIX/Linux

OpenCV

Arduino/Raspberry Pi

Profile

Dedicated high school software engineering student, specializing in algorithms and control theory, always eager to learn. Abundant experience in leading and working with teams, both in school and at work. Resourceful, organized, and proactive, with excellent interpersonal communication skills.

Education

Archbishop Mitty High School, San Jose

→ August 2019 — May 2023

- 4.737 Academic Cumulative GPA
- Scored 36 (all sections) on ACT, 1590 on SAT
- 15 Advanced Placement Courses (10 taken, all 5s)
- 2 Undergraduate Awards, General Excellence Award

Work Experience

Software Engineering Intern at Parkworks

→ June 2022 — August 2022

Paid summer internship; used OpenCV, Apriltags, PyQt5 and Flask with linear algebra and vector math to create a robot program—motor setpoints for a robot arm from computer vision target data and custom kinematics. Gained valuable technical and personal experience from working in a professional setting and writing documentation/communicating my process to coworkers.

Technical Papers

Autonomous Path Following Algorithms [PDF]

AprilTags Pose Estimation & Robot Program [PDF]

Projects

Path Following Libraries & Visualizer

- Libraritized autonomous path following algorithms for differential drive robots using Ramsete and Pure Pursuit motion controllers
- **2D/3D path planner and visualizer** [link]

Hobbies

Applied math

Mechanical engineering

Computer-aided design

3–D printing

IOT integration

Game development

Competitive piano

- Winner of the 2022 FRC Innovation in Controls Award

TKO Electronics Simulator

- Java (LibGDX) app for visualizing and simulating FRC electronics wiring diagrams to assist with electronics training during COVID-19
- Winner of the 2021 KLA Software Engineering Award

Apriltags Vision Robot Motion Planning

- **Short YouTube video of demonstration [link]**
- Proof-of-concept for Parkworks internship
- Self-designed & built 3D printed XY platform

Battle-City

- Game inspired by Namco's 1985 Battle City
- Uses shortest-path graph algorithms to generate difficulties

Clubs/Activities

FRC Robotics Team 1351

→ August 2019 — Present

Software Lead (May 2021 — April 2022)

Responsible for robot code, training new members, coordination with other leads and officers. Extensive research and development of advanced autonomous path following algorithms using Ramsete and Pure Pursuit motion planning in addition to Kalman filtering and state space for sensor fusion and pose estimation.

Vice President of Engineering (April 2022 — Present)

Leading the 80+ member engineering department (mechanical, electronics, software). In communication with leads and mentors to set goals and organize all engineering projects, and guide overall robot design, in addition to continued software work.

President — Mitty Math Team

→ August 2020 — Present

Organizing and planning meetings, as well as weekly and 4 yearly competitions for Mitty's math team. Handling cooperation with school for outreach and schoolwide competitions. Weekly meetings with 30+ members.

Co-Lead — Mitty Advocacy Project x CS

→ Sep 2020 — Present

Combining computer science and social advocacy. Projects include data collection and analysis on federal/state legislation and machine learning to find trends in mental health issues. Data used when presenting to lawmakers.

Tech Director — ThetaHacks

→ May 2020 — March 2021

Co-founder and tech director of ThetaHacks, an online hackathon with 500+ participants in early 2021. In charge of tech related aspects of the hackathon, including setting up websites, organizing online events, advertising, and hosting speakers.