Alex Chen

Computer Science Student

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Education

Columbia University, Fu Foundation School of Engineering and Applied Science — *New York, NY*

Bachelor of Science in Computer Science — *Sept. 2021 - May 2025 (EXPECTED)*

- **Relevant coursework**: Data Structures, Physics: Mechanics and Relativity, Multivariable Calculus, General Chemistry — *Fall 2021*

University of California, Berkeley — *Berkeley, CA*

Pre-College Scholars — *June 2020 - Aug. 2020*

- **Relevant coursework**: Machine Structures — *Summer 2020*

Skills

Languages/Frameworks	Java, Python, C, HTML/CSS/JavaScript, PostgreSQL, T-SQL, React, GraphQL, Node.js, Flask, Azure
Creative/CAD	Adobe (Photoshop, Illustrator, Premiere Pro), SolidWorks
Computer	Microsoft (Word, PowerPoint, Excel, Outlook), Google Docs, LaTeX, Git

Experience

FIRST Tech Challenge — Robotics Competition — *San Jose, CA*

Programming Lead — *Sept. 2016 - May 2021*

- Designed a specialized path following algorithm for omnidirectional drivetrains; allowed the team's robot to navigate between waypoints quicker and score more points.
- Established a CAD-first workflow within a 15-member team after learning SolidWorks; sped up the prototype/build cycle and increased the team's reliance on 3D-printed parts.
- Coordinated a 4-member programming subteam; taught members the Gitflow Workflow for pursuing experimental features between competitions.
- Earned the Control Award at World Championships for reliable robot code and innovative computer vision algorithms.

Sleekfin — Real Estate Startup — *San Jose, CA*

Frontend Developer, Graphic Designer Intern — *May 2020 - Aug. 2020*

- Created a full mobile app mockup with 30+ screens in Adobe XD based off verbal descriptions of desired functionality.
- Developed React Native components for user input; migrated existing codebase to use these new components, unifying the app's design language.

Hack on Track — STEM Education Nonprofit — *San Jose, CA*

Co-Founder, Head of Curriculum — *June 2018 - May 2021*

- Taught weekly coding workshops at community centers and low socioeconomic status schools using self-written lesson plans.
- Introduced students to SCRATCH, Python, and JavaScript; reached roughly 10–20 new students each session.

Projects

KiloDoc — Collaborative Typesetting Web App (www.kilodoc.com)

JavaScript, React, GraphQL, PostgreSQL, Node.js, Azure Functions — *Apr. 2020 - PRESENT*

- Deployed a full-stack web app consisting of 40k lines of static React code, a GraphQL API running on Azure Functions, and a PostgreSQL database.
- Optimized the performance of editing very large cloud documents by designing a tree-like document storage format that allows for subtrees to be dynamically loaded/unloaded based on browser viewport.
- Handwrote SQL queries to speed up critical tasks, increase the reliability of concurrent requests, and enable complex operations like full-text search.
- Set up a PDF generation pipeline that uses headless Chromium instances controlled by Puppeteer, listening to an Azure Service Bus Queue.

Foxtrot — Rapid 2D Spline Generation GUI

Java *Oct. 2019 - Mar. 2020*

- Built a 2D interface using Java Swing for editing splines by drag-and-dropping anchors; supports viewport x/y translation and zoom.
- Utilized by robotics team to rapidly create and test different robot paths for best efficiency; incorporated knowledge of 2D kinematics to display robot's forecasted velocity and acceleration.
- Developed a custom file format based on JSON that stores the minimum representation of a path, suitable for path following algorithms.

PALS — Robotics Tournament Scouting Platform

Python, Flask, T-SQL *Nov. 2018 - Apr. 2019*

- Created a tournament scouting web app that displays overall team rankings and graphs each team's strengths/weaknesses using form submissions of match results.