Ryan Chang

Computer science and math student with a strong background in problem solving, working in teams, and learning new skills. Looking to gain experience as a software engineer while contributing towards solving real world problems.

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EXPERIENCE

OPT Industries — *Software Engineering Intern*
June 2022 - Present (Ends August 2022)

- Designed data analysis dashboard in Angular to create interactive visualizations of sensor data for 3D printers
- Optimized MongoDB queries with indexes to decrease query time by 10x
- Migrated backend from REST API to GraphQL API, improving code performance, readability, and maintainability
- Designed algorithm to efficiently process tens of millions of sensor readings to accurately calculate printer productivity
- Created scripts to deploy Docker containers to AWS EC2 instances

Conservation X Labs — *Software Engineering Intern*
January 2022 - February 2022

- Developed user dashboard in React that would be deployed to conservationists in Costa Rica in May 2022
- Used AI models to flag endangered species sightings on cameras
- Designed frontend and backend for shop page that enabled users to purchase AI models over the cloud and deploy them to wildlife cameras
- Optimized MySQL data queries to improve loading times by 10x
- Redesigned account settings pages for accessibility and extensibility

EDUCATION

Massachusetts Institute of Technology
Double Major in Computer Science and Math, Minor in Economics

September 2021 - Graduating May 2025 (GPA: 5.0/5.0)

Coursework:

- Design and Analysis of Algorithms
- Intro to Machine Learning
- Linear Algebra

Clubs

Autonomous Boat Team - *Path Planning and State Estimation Lead*

- Responsible for designing pathing algorithms for autonomous boat competing in the Roboboat competition
- Designs hardware and software for determining the position and velocity of the boat as well as a map of its surroundings
- One of the leads of a team of 8 programmers
- Works with Robot Operating System (ROS), ArduPilot, and MAVLink

Battlecode Competition - *Game Engine Programmer*

- Responsible for creating infrastructure and engine for AI competition
- Thousands of contestants around the world work in teams to develop AI players using the engine that compete for >$30,000 in prizes

AWARDS

Google Code Jam Round 2 Qualifier in 2021 and 2022

- Top ~10% of participants in global contest
- Wrote computer programs to efficiently solve computational challenges

USA Math Olympiad Qualifier in 2021

- Top ~0.1% of high school participants in national contest
- Solved problems involving number theory, geometry, combinatorics, algebra

USA Computing Olympiad Platinum Qualifier

- Top ~1% of high school participants in national contest for solving programming problems

PROJECTS

Golf Parameter Solver

- Solves randomly generated golf courses by simulating every possible shot
- Creates interactive visualizations of which combinations of angles and speeds will go into the goal
- Built with OpenGL, Dear ImGui, matplotlib, ReactPhysics3D
- github.com/Ryan10145/golf-parameter-solver

Year in Pixels Creator

- Web app for users to keep track of their mood throughout the year
- Intuitive and customizable interface
- Free and secure cloud storage
- Built with React, Bootstrap, Express, MongoDB, and Passport
- year-in-pixels-creator.herokuapp.com/#/

SKILLS

Programming Languages: Python, JavaScript, HTML, CSS, TypeScript, Node, C++, Java, Rust, Assembly, SQL

Other: React, NumPy, GraphQL, MongoDB, Angular, Firebase, matplotlib, MongoDB, OpenGL,