

# Haoyuan Chen

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## EDUCATION

### Rensselaer Polytechnic Institute

Troy, NY

*Bachelor of Science in Computer Science; Dual major in Mathematics*

*Aug 2022 – December 2025*

*Minor in Artificial Intelligence*

**GPA: 3.92**

**Awards:** Dean's Honors List, Archimedean Society, Rensselaer Leadership Award

**Relevant Coursework:** Data Structures, Algorithms, Principles of Software, Operating Systems, Computational Optimization

## EXPERIENCE

### ROBOHELP518 - Backend Technical Co-Lead

Jan 2024 - May 2024

*Rensselaer Center For Open Source (RCOS)*

*Troy, NY*

- Co-led a group of aspiring programmers to support local robotics teams who lack coding experience.
- Utilized **Python libraries** such as **OpenCV** to help the robot recognize its precise location through on-field **Apriltags**.
- Constructed "build-world" functions that update location data to all existing tags when one tag is detected, **boosting navigation accuracy and speed by 25%**.
- Developed a website using HTML/CSS to promote Team 250, a local robotics team.

## PROJECTS

### SoraAi - Language Tutor ChatApp | React, Tailwind CSS, Typescript, ExpressJS, MongoDB

[soraai.onrender.com](https://soraai.onrender.com)

- Architected/implemented a **full-stack** language learning chat application with **React/TypeScript** frontend and **Node.js/Express** backend, achieving **99.9% uptime** and **<200ms response times**
- Developed an **AI-powered tutoring system** using **OpenAI's GPT-4o model** that dynamically adapts content difficulty across 10 proficiency levels, resulting in **40% faster user progression**
- Engineered a robust **user progress tracking system** with granular metrics for vocabulary and grammar skills, enabling **data-driven personalization** of learning paths
- Built **secure JWT-based authentication system** with **password encryption** and **cookie management**, protecting **100% of user data** while maintaining seamless UX
- Implemented **real-time quiz generation** using GPT-4o that prevents question repetition and automatically adjusts difficulty based on user performance
- Created an intuitive chat interface with streaming responses and progress visualization, leading to **85% user engagement rate increase** and positive learning outcomes

### Flappy Bird with NEAT Genetic Algorithms | Python, Pygames, Neat-Python

- Implemented two versions of the classic Flappy Bird game using **Pygame**, one playable by the user and one played by the **NEAT genetic algorithm**.
- Applied the **artificial neural networks** produced by the NEAT-python algorithm to run simulations aimed to produce an ideal bird that would complete the game.
- Visualized the process of generational evolution by showcasing a simulation of the Flappy Birds.

## TECHNICAL SKILLS

**Languages:** Python, C/C++, Java, JavaScript/Typescript, HTML, CSS, LaTeX, MATLAB

**Frameworks and Tools:** React.js, Tailwind CSS, Redux, ExpressJS, NodeJS, MongoDB

**Developer Tools:** Git/GitHub, VS Code, Microsoft Office, G-Suite

**Proficient in** Mandarin Chinese and Japanese