Ryan Tan

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EDUCATION

University of California, Berkeley — Expected May 2026
B.S. Electrical Engineering and Computer Science - GPA: 3.57/4.0 — *Berkeley, CA*

Relevant Coursework: Structure of Computer Programs, Discrete Mathematics, Probability Theory, Data Structures and Algorithms, Object Oriented Programming, Linear Algebra, Computer Security*, Computer Networks*

EXPERIENCE

Coding Instructor — Sep. 2023 – May 2024
Code Ninjas — *Fremont, CA*
- Designed and taught programming lessons in **Python**, **JavaScript**, and **Unity** to 30+ students aged 5–14, boosting coding proficiency and project completion through hands-on activities tailored to individual learning styles.
- Provided one-on-one and group instruction tailored to individual learning needs, boosting student engagement and retention through personalized teaching methods.

PROJECTS

K-Popify | *React, TypeScript, Flask, Python, Pandas, NumPy, Spotify Web API* | GitHub Link — Dec. 2024 – Jan. 2025
- Built a web application to recommend K-Pop songs based on user-inputted tracks, integrating the **Spotify Web API** to fetch track features and utilizing **Flask** for a **RESTful** backend to deliver personalized song suggestions dynamically.
- Optimized song recommendation accuracy to **92%** across **275 K-Pop** songs by implementing an **Euclidean distance-based** algorithm analyzing **9 distinct audio characteristics**.

Binder | *React, TypeScript, Convex, Clerk, Python, Flask, OpenAI API* | GitHub Link — Oct. 2024 – Oct. 2024
- Led the full-stack development of a collaborative studying platform for custom quizzes and study group matching, leveraging **OpenAI API** and **Flask** to generate personalized learning content based on group goals.
- Improved study group matching accuracy by **65%** by implementing a **Bayesian Knowledge Tracing** algorithm that analyzes quiz performance across multiple subject areas, acheiving **82%** accuracy in predicting student's strengths and weaknesses.
- Developed a robust backend using **Convex** and **Clerk**, achieving **99%** authentication accuracy and ensuring secure, efficient user data management for a seamless platform experience.

Skincare Tracker | *React, Node.js, Express.js, Tailwind, MongoDB* | GitHub Link — June 2024 – Sep. 2024
- Built a responsive web app for managing skincare routines using **React** and **Tailwind CSS**, enabling users to track progress and develop consistency.
- Reduced API response times by **54%** by optimizing **MongoDB** queries and implementing efficient **RESTful API** design with **Express.js**.
- Implemented user authentication with **JSON Web Tokens (JWT)** and integrated API tests using **Supertest**, ensuring secure session management, data integrity, and reliable API endpoints.

LEADERSHIP/EXTRACURRICULAR ACTIVITIES

Software Developer — Sep. 2024 – Dec. 2024
UC Berkeley — *Berkeley, CA*
- Developed an LLM-based recommendation system with a team of 7 achieving **82%** accuracy for **10,000+** queries by implementing a two-stage **Retrieval Augmented Generation (RAG)** approach using **Python**, **PyTorch**, and **OpenAI API**.
- Streamlined data workflows with **Pandas** and **NumPy**, reducing computation time by **74%** and improving response efficiency for large-scale data processing.

Machine Learning Researcher — Sep. 2023 – Dec. 2023
Algoverse — *Remote*
- Collaborated with a group of 4 students to explore the effects of implementing emotional cues when interacting with LLMs.
- Developed a custom language model by integrating emotional stimuli into prompts to enhance user interactions, fine-tuning the model using a combination of transfer learning and hyperparameter optimization techniques.
- Evaluated the impact of emotional cues on NLP tasks, including sentiment analysis, measuring a 52% improvement in user-friendliness.

TECHNICAL SKILLS

Languages: Python, TypeScript, C++, Java, JavaScript, HTML, CSS, SQL
Frameworks: React, Node.js, Express.js, Tailwind, Flask
Tools: AWS, Docker, MongoDB, VS Code, PyCharm, Eclipse, Jupyter Notebook, Google Colab
Libraries: PyTorch, Scikit-learn, NumPy, Pandas, Matplotlib