Richard Guo

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Education

Columbia University **New York City, NY**

Bachelor of Science in Computer Science; GPA: 4.0/4.0 *Expected May 2027*

Coursework: Fundamentals of Computer Systems, Advanced Programming, Introduction to Databases, Data Structures & Algorithms, Discrete Math, Multivariable Calculus, Linear Algebra, Probability Theory.

Technical Skills

Languages/Databases: Java, Python, C/C++, C#, JavaScript, HTML, CSS, SQLite, PostgreSQL
Libraries/Frameworks: React, Flask, Express.js, PyTorch, NumPy, Pandas, Matplotlib, Unity
Tools: Git, VS Code, Visual Studio, IntelliJ, PyCharm

Experience

Columbia University – Creative Machines Lab **New York, NY**

Undergraduate Research Assistant *Sept. 2025 – Present*

- Developing a **vision–projection system** that detects important objects using a camera and projects visual highlights onto them in real time, creating a baseline for projector-based augmented reality research.

Pennsylvania State University **University Park, PA**

Natural Language Processing Research Assistant *June 2025 – August 2025*

- Fine-tuned **small language models** on **50M+ tokens** in **PyTorch** using the **TinyStories** dataset, generating children's stories and evaluating them to identify the best-performing model configurations.
- Reduced output evaluation time by **70%** by prompt-engineering a **GPT-based rubric** to grade **1,000+ outputs**, validated with statistical tests and **Matplotlib** visualizations.
- Uncovered a log-shaped relationship between block size and output quality that guided future experiment design.

Jane Street Capital **New York, NY**

Academy of Math and Programming Scholar *June 2024 – Aug. 2024*

- Completed a curriculum in computer science and math under Jane Street traders and professors, implementing efficient algorithms for puzzles and strategy games.
- Built a **Camel Up expected-value bot** using probability distributions of dice rolls to optimize betting strategy, increasing win rate by **25–40%** over baseline play.
- Developed **Python trading bots**, simulating live order routing and market interactions; implemented **pennying strategies** and **fair-price calculations** to finish **Top 10** in Jane Street's **Electronic Trading Competition**.

Projects

Recall – AI Callback Scheduler | *Python, LiveKit, OpenAI, Deepgram, Cartesia, Supabase* **October 2025**

- Built an **AI-powered voice agent** that autonomously returns missed calls, detects voicemail, and books appointments via Google Calendar—streamlining client follow-ups and recovering lost leads for small businesses.
- **Finalist (Top 6 of 80+ teams)** and **Emerging Tech Track Winner** at **DivHacks 2025**, Columbia University's annual diversity-focused hackathon.

Wordle Solver & Practice Platform | *Python, Flask, React, Tailwind* **August 2025**

- Designed a Wordle solver that achieved **100% accuracy** on a **2,300-word pool**, averaging **3.495 guesses** with combinatorial search and entropy heuristics in **Python**.
- Integrated solver into a full-stack practice platform (**Flask REST API + React**) supporting interactive play, solver-assisted guessing, and competitive player-vs-bot matches.

Protein Pilot | *React, JavaScript, HTML/CSS* **August 2025**

- Built and deployed a full-stack recipe assistant that generated personalized high-protein meal plans with **React** and **Vercel**; tested with **100+ users** in a structured beta and achieved **90% satisfaction** on usability and recipe quality.

Leadership

Lead Math Instructor **August 2024 – May 2025**

Kumon *New York, NY*

- Taught 30+ K–12 students (arithmetic → calculus); trained 2 junior instructors; contributed to 4.8-star Google rating.
- Designed engagement strategy (assignment racing) that cut average work time from 45 minutes to 20 minutes.