Richard Guo

949-508-5168 richardguo246@gmail.com linkedin.com/in/richardguo24 github.com/RichardGuo24

Education

Columbia University **New York City, NY**

Bachelor of Science in Computer Science; GPA: 4.0/4.0 *Expected May 2028*

Coursework: Data Structures & Algorithms, Discrete Math, Computer Systems, Multivariable Calculus, Linear Algebra

Technical Skills

Languages/Database: Python, Java, C#, C/C++, JavaScript, SQLite
Libraries: PyTorch, NumPy, Pandas, Matplotlib
Tools: Git, VS Code, Visual Studio, IntelliJ, PyCharm
Frameworks: Flask, React, Unity

Experience

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

Pennsylvania State University *University Park, PA*

- Fine-tuned nanoGPT transformers in PyTorch on the TinyStories dataset (50M+ tokens), systematically varying block and batch size to study how hyperparameter choices affected output quality.
- Generated 1,000+ story samples and evaluated their grammar, coherence, and narrative quality through a prompt-engineered rubric; ran statistical tests (two-sample t-tests, Tukey HSD), and visualized results with matplotlib.
- Benchmarked Hugging Face GPT-2 small/medium against an n-gram baseline; found that over 90% of a randomly selected group of 30 students preferred the transformer outputs to the n-gram outputs.

Jane Street Academy of Math and Programming Scholar **June 2024 – August 2024**

Jane Street Capital *New York City, NY*

- Completed a rigorous curriculum in computer science and math under the guidance of Jane Street traders and university 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 Electronic Trading Competition.

Projects

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

- Implemented a Wordle solver with combinatorial search and entropy-based heuristics, solving the 2,300-word pool with 100% accuracy in an average of 3.495 guesses.
- Engineered a full-stack practice platform with Flask REST APIs (hosting solver logic) and a React frontend, enabling interactive gameplay, solver integration, and competitive bot matches.
- Cut median API latency ∼73% (450 ms → 120 ms) by offloading solver logic to the backend and caching results, ensuring stable performance for both solo and bot-vs-player modes.

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

- Deployed a full-stack recipe assistant with React frontend and Vercel serverless backend; integrated Anthropic Claude API to generate personalized high-protein meal plans.
- Scaled backend to support 100+ concurrent requests with secure environment key management; tested with 10+ beta users and received ∼90% satisfaction.

First Person Shooter Controller | *Unity, C#* **May 2025**

- Implemented a custom FPS controller in Unity with sprinting, crouching, and head-bobbing effects modeled via sine/cosine functions; added physics-based recoil using Vector3 interpolation.
- Developed an interactive environment system for objects (e.g., doors) and deployed the prototype, gathering 100+ plays and user feedback to validate mechanics.

Leadership / Other Work

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.