

Chetan Goenka

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EDUCATION

University of California, Berkeley

Berkeley, CA

Master of Science in Electrical Engineering and Computer Science – GPA: 3.9/4.0

Expected Aug 2026

Bachelor of Arts in Computer Science – GPA: 3.9/4.0, Graduated with Distinction

2024

Relevant Coursework: Deep Reinforcement Learning, Machine Learning, Artificial Intelligence, Efficient Algorithms, Data Structures, Human-AI Interaction, Computer Architecture, Internet Architecture and Protocols

TECHNICAL SKILLS

Programming Languages: Python, JavaScript/TypeScript, Java, SQL, C/C++, R, HTML/CSS, RISC-V

Frameworks & Tools: PyTorch, React, Node.js, Docker, AWS, Flask, scikit-learn, Pandas, NumPy, Git, OpenAI API

EXPERIENCE

Graduate Research Assistant

June 2024 – Present

UC Berkeley Electrical Engineering and Computer Science

Berkeley, CA

- Built a web-based IDE that captures developers' think-aloud speech as live context for an AI coding assistant, enabling the AI to act on design reasoning and preferences users never type; validated in an 11-participant study
- Architected the real-time speech pipeline as a React/Node.js client-server system streaming audio over WebSockets to an ASR service with pause-based transcript segmentation, containerized with Docker and deployed on AWS
- Orchestrated 3 LLM agents with schema-enforced JSON outputs to classify think-aloud speech, triage proactive AI responses via confidence thresholds, and maintain running models of user preferences and intentions
- Engineered concurrency handling across asynchronous speech, typing, and LLM processing, implementing in-flight analysis cancellation, stale-response prevention, and multi-channel activity monitoring to eliminate race conditions
- Developed an AI-powered code explanation system with custom CodeMirror editor extensions, rendering interactive DOM-based overlays across 3 hierarchical explanation modes (line, block, data-flow)

Data Science & Engineering Intern

June 2022 – Aug. 2022

Oracle Corporation

Austin, TX

- Automated enterprise account prioritization by building an ML scoring pipeline in Python and SQL that ranked 500+ prospects across 4 product lines with predictive models
- Deployed robust ETL scripts to ingest and process marketing campaign data, programmatically computing attribution and win rates for high-value strategic accounts with Pandas and NumPy
- Translated complex business requirements into efficient SQL queries, enabling executive teams to visualize revenue attribution and conversion metrics to guide targeting strategy

PROJECTS

RLHF for Open-Ended Instruction Following | *Python, PyTorch*

Feb. 2026 – May 2026

- Implemented online policy-gradient RLHF algorithms (GRPO, DrGRPO, GSPO) with group-relative advantage estimation, clipped surrogate objectives, and KL regularization to fine-tune a 1.5B-parameter open-weight LLM on 5K human preference pairs, evaluated by LLM-judge win rates against the frozen base model
- Designed a replay-buffer-based online preference optimization method: constructed max-vs-rest preference pairs from policy rollouts in a FIFO buffer and cached reference log-probabilities to eliminate redundant forward passes
- Mitigated reward hacking with a pessimistic reward-model ensemble (elementwise-min aggregation); best configuration reached a 75% LLM-judge win rate, beating the strongest single-model online baseline (70%)

Python Compiler | *Python, Java, RISC-V, JFlex, CUP*

Jan. 2024 – May 2024

- Built a full compiler in Java for a statically-typed Python dialect: JFlex lexer with stack-based indentation handling, CUP parser generating type-annotated ASTs, and a 4-pass semantic analyzer performing class hierarchy resolution, symbol table construction, and type inference across 172 test cases
- Created a RISC-V code generator with an optimization pipeline applying constant propagation, dead code elimination, and register allocation, reducing instruction count by 40% through dataflow analysis

Memory Bottle - TEI 2026 Student Design Challenge | *Python, C++, Flask*

Aug. 2025 – Feb. 2026

- Engineered a distributed IoT architecture for multi-node audio synchronization, implementing a custom WiFi file-transfer protocol and reliable USB serial communication between heterogeneous hardware nodes
- Programmed an embedded finite state machine on ESP32 controlling 5 sensors with real-time NeoPixel LED feedback, coordinated by a Flask control server synchronizing audio playback with Arduino LED arrays