

GUNTASH GILL

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EDUCATION

University of California Santa Barbara | B.S. in Computer Engineering

Sep 2022 – June 2026

Santa Barbara, CA

– **Coursework:** Computer Science Problem-Solving, Object Oriented Design, Digital Design Principles, Computer Architecture, Deep Learning, Foundations of Circuitry, Logic Design, Data Structures and Algorithms, Game Theory, Artificial Intelligence

EXPERIENCE

AI Research Intern | REAL AI Lab, UC Santa Barbara — DIY-MKG Project

Jul 2025 – Nov 2025

Santa Barbara, CA

- Built a Flask-based multilingual vocabulary learning system using a NetworkX knowledge graph to generate adaptive quizzes.
- Designed a mastery tracker with spaced repetition (accuracy/streak-priority + next-review dates) to schedule review.
- Implemented automated evaluation across 3 languages (Spanish/Korean/Japanese), generating 300 questions (MCQ + fill-in-the-blank).
- Achieved 98% MCQ correctness and 76–84% fill-in-the-blank correctness; analyzed failure cases to drive prompt and logic refinements.
- Improved reliability by adding question-flagging and guardrails to capture ambiguous outputs and reduce repeat failure modes.
- Scaled graph expansion to ~3,000 vocabulary items and observed continued growth through 500 update iterations without saturation.

Full Stack Developer | UC Santa Barbara — HappyCows

Oct 2025 – Dec 2025

Santa Barbara, CA

- Improved usability and reliability of HappyCows, a full-stack multiplayer platform with OAuth login and session-based gameplay.
- Led a frontend redesign in a 6-person Agile team, simplifying the homepage around the most common user flows.
- Implemented React Router flows that reduce steps into gameplay by auto-routing single-commons users while keeping multi-commons selection.
- Hardened session continuity with conditional redirects and URL-safe navigation patterns to prevent broken states after login/refresh.
- Upgraded WireMock OAuth test infrastructure to `wiremock-jetty12` for Spring Boot 3 / Java 21 compatibility.
- Improved test robustness by integrating Stryker mutation testing (Vitest runner) to catch weak assertions and prevent regressions.

Web Developer | C.H.I Logistics

Oct 2024 – Dec 2024

Fresno, CA

- Launched a responsive corporate website using React, improving mobile accessibility and overall user experience.
- Implemented dynamic application and contact forms to streamline recruiting workflows and customer inquiries.
- Configured an automated CI/CD pipeline using GitHub Actions and AWS hosting to enable reliable deployments and faster iterations.

Software Engineer Intern | IPMD, Inc.

Jun 2024 – Sep 2024

Remote

- Developed a financial analytics platform to track stock performance and generate indicator-based investment insights.
- Built Flask REST APIs with JWT authentication and modular Blueprints to support secure user workflows and data access.
- Designed SQLite/MySQL schemas for price history and indicators, and implemented scheduled market-data ingestion updates.
- Implemented SMA and stochastic oscillator pipelines, storing computed signals for recommendations and reporting.
- Integrated cloud deployment workflows across Azure/Google Cloud to ship production backend APIs and hosted frontend builds.
- Automated scheduled refresh jobs and parallelized multi-ticker updates to keep indicator tables current with minimal intervention.

Web Developer & Graphic Designer | 2 For 1 Pizza House

Apr 2024 – Jun 2024

Fresno, CA

- Designed and deployed a responsive AWS-hosted restaurant website, streamlining online ordering and improving interaction.
- Built a modern UI using React.js and Tailwind CSS, focusing on mobile usability, clean layout, and intuitive navigation.
- Implemented on-page SEO best practices (meta tags, local keywords), increasing Google search visibility and organic traffic.
- Developed a custom backend admin dashboard with RESTful APIs for staff to manage menu items and site content independently.

PROJECTS

CAPSTONE 3D UCSB — Campus-Scale 3D Reconstruction | *Python, COLMAP, Gaussian Splatting*

- Built a campus-scale 3D reconstruction pipeline using SfM and Gaussian Splatting to produce an interactive digital twin of UCSB.
- Implemented privacy-aware filtering using YOLO, Laplacian sharpness analysis, and metadata consistency checks.
- Developed incremental COLMAP/HLOC workflows for multi-session reconstruction, point cloud merging, and building expansion.
- Integrated DISK + RoMa feature matching to improve robustness under wide-baseline views and outdoor lighting.
- Optimized dense reconstruction with Gaussian Splatting using adaptive density control for efficient GPU rendering.
- Automated multi-session merging by standardizing reconstruction outputs and streamlining reruns for incremental campus expansion.

PC Builder Agent | *Python, LLMs (OpenAI / Ollama), Pydantic*

- Built an AI agent that translates workload and budget constraints into validated PC build recommendations.
- Implemented a plan-validate-revise loop with generative planning and deterministic compatibility checks to ensure feasible configs.
- Designed modular architecture separating reasoning, validation, and explanation to improve reliability and extensibility.
- Validated builds with rules (socket/chipset, RAM type, PSU headroom, form factor, thermals) to prevent incompatible builds.

TECHNICAL SKILLS

Languages: Python, C/C++, JavaScript, HTML/CSS, SQL, Verilog, RISC-V Assembly

Full-Stack: React, Tailwind CSS, Node.js, Flask, REST APIs, OAuth, JWT Auth, SQLAlchemy

AI/ML: LLMs (OpenAI API, HuggingFace, Ollama), Reinforcement Learning, CNNs, TensorFlow, YOLO, NetworkX

Cloud/DevOps: AWS, Azure, Google Cloud, Docker, Kubernetes, GitHub Actions, Azure Pipelines, CI/CD

Testing/Tools: Git, GitHub, VS Code, Postman, WireMock, Vitest, Stryker (Mutation Testing), Figma