

Aktan Azat

aaazat@ucdavis.edu | 310-405-1476 | Davis, CA

EDUCATION

University of California, Davis

Davis, CA

B.S. in Computer Science & Engineering; GPA: 3.93

Graduating June 2026

- **Relevant Coursework:** Special Topics in AI (LLMs) (ECS 189G – planned), Algorithm Design & Analysis (ECS 122A), Operating Systems (ECS 150), Probability & Statistics for CS/Mathematics (ECS 132, MAT 135A), Computer Architecture (ECS 154A/B), Software Engineering (ECS 160)

Foothill - De Anza Community College District

Cupertino/Los Altos, CA

A.S. in Computer Science (x2), Physics, Mathematics (x2); Transferred

September 2022 – June 2024

RESEARCH EXPERIENCE

Undergraduate Researcher, Complex Care Laboratory (UC Davis Health)

May 2025 – Present

Advisor: Clodomir Santana, Ph.D.

Sacramento, CA

- Developing domain-specific NLP system to extract cardiovascular entities from clinical notes, enabling concept salience and polarity analysis for risk stratification in complex care populations.
- Fine-tuned spaCy v3 named entity recognition model with custom tok2vec embeddings on 4,200 annotated clinical notes, achieving 91% F1 score (vs 76% baseline) for cardiovascular entities; rule-based postprocessing reduced false positives by 34%.
- Deployed end-to-end information extraction pipeline processing 850+ notes weekly with automated validation; precision/recall tracking on held-out sets maintains 88-93% performance, flagging 127 previously undetected high-risk condition mentions.
- Integrated caseOLAP document analysis framework by mapping extracted entities to UMLS clinical taxonomy via scispaCy; generated document-term matrices enable polarity scoring that identified 6 salient risk factors correlating with readmission ($p < 0.01$).

Undergraduate Researcher, Ben-Shalom Lab (UC Davis Health)

Sep 2025 – Present

Advisor: Mandar Patil

Sacramento, CA

- Applying computational modeling and statistical inference to understand how axon initial segment geometry modulates neuronal excitability through analysis of high-density microelectrode array recordings.
- Developed automated data processing pipeline for spike-sorting and extracellular signal analysis across 120+ neurons; built statistical models showing 18-32% variance in neural threshold explained by spatial features, validated against immunostaining with 89% concordance.
- Fit multi-compartment biophysical models to experimental data, using parameter optimization to test hypotheses about ion channel distributions; models predict 15-40% threshold shifts from spatial reorganization, consistent with observed plasticity after 72h protocols.

Undergraduate Researcher, Motion Lab

Sep 2025 – Present

Advisor: Michael Neff

Davis, CA

- Developing sequence models for human gesture generation from motion capture data to drive character animation.

INDUSTRY EXPERIENCE

Member of Technical Staff

July 2025 – Present

Ovavision — fertility health

New York City, NY (Remote)

- Training **PyTorch** time-series models for cycle prediction served via FastAPI; validation tests show 10–25% fewer false-positive alerts vs baseline rule-based system, targeting reduced support load at launch.
- Building React/Next.js features integrated with Flask/FastAPI backends; conducting internal UAT with clinical advisors ahead of beta release.

Fab Production Intern

June 2025 – September 2025

Rigetti Computing

Fremont, CA

- Automated validation of 60M+ daily sensor records with Python/PostgreSQL ETL pipeline; replaced manual spot-checks covering <5% of data, catching 47 critical anomalies that would have caused fabrication failures.
- Optimized time-series data processing with table partitioning and composite indexes; 65% faster query response (2.1s to 0.74s) enabled real-time analytics dashboard for production monitoring.

Software Engineer Intern

January 2025 – May 2025

European Bank for Reconstruction and Development (EBRD)

London, United Kingdom

- Built conversational research system using **Azure OpenAI (GPT-4)** with retrieval-augmented generation and Cognitive Search; internal surveys rated 83% of responses useful vs 61% for prior keyword search, cutting analyst research time by 2.3 hours/week and reducing escalations by 13%.
- Fine-tuned domain-specific LLMs with **LoRA/PEFT (Hugging Face)** on 12,000 bank documents, achieving 18–35% accuracy gains on technical QA (baseline GPT-4 at 64%, fine-tuned at 82–86% depending on document type); implemented content-policy filtering to block sensitive disclosures.
- Deployed MLOps pipeline on **Azure ML** with gated evaluation and blue-green inference on AKS; automated rollout checks cut model-to-staging from 2–3 days to 3–6 hours, enabling weekly model updates instead of monthly.
- Built NLP pipeline (**spaCy + transformers**) processing 30k–70k articles/day for topic and sentiment classification; 86–93% precision on risk labels let analysts triage 15–30% faster, flagging 340+ high-risk mentions that manual scans missed.

Data Science Intern

June 2024 – August 2024

Quantum Brains

London, United Kingdom (Remote)

- Designed RAG chatbot with hybrid **BM25 + sentence-transformers** retrieval and Pinecone vector database plus cross-encoder re-ranking; reduced median query response time from 4.2min (email) to 18sec (chat), processing 800 daily interactions.
- Implemented evaluation framework with few-shot prompting and subject matter expert validation; designed guardrails for prompt-injection and PII redaction that kept hallucination rate below 7% across 2,400 production queries.
- Deployed **FastAPI** service with Redis caching, containerized with Docker via GitHub Actions; monitoring and alerts enabled 15min rollbacks when answer quality degraded after corpus updates.

TEACHING & MENTORSHIP

Course Tutor

September 2024 – Present

UC Davis CS Tutoring Club

Davis, CA

- Led weekly tutoring sessions for Operating Systems (ECS 150), Algorithm Design & Analysis (ECS 122A), Computer Architecture (ECS 154A/B), and Probability & Statistics (ECS 132); average 7 students per section.
- Developed targeted review materials and diagnostic problems for systems programming, algorithm complexity analysis, and statistical inference; held 4 hours of weekly tutoring for conceptual clarification and debugging support.

Workshops Lead, Machine Learning Student Network

September 2024 – Present

UC Davis

Davis, CA

- Designed and delivered technical workshops on ML fundamentals, retrieval-augmented generation systems, and model evaluation to audiences averaging 20 students; created accompanying Jupyter notebooks and starter code for hands-on exercises.
- Mentored team of 4 students through quarter-long research project on document classification; guided experimental design, code review, and final presentation to 40 attendees.

Tech VP, Swift Coding Club

September 2024 – Present

UC Davis

Davis, CA

- Designed and delivered technical workshops on Swift fundamentals to audience averaging 15 students; created accompanying Swift projects and starter code for hands-on exercises.
- Led development team of 4 engineers building production club app and website serving active member base; managed sprint planning, code reviews, architecture decisions, and deployment pipeline.