Miguel Beltran

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Education

University of California, Davis — **Davis, CA**
Bachelor of Science in Computer Science — *Expected June 2027*
Relevant Coursework: Algorithm Design & Analysis, Data Structures, Object-Oriented Programming, Computer Architecture, Linear Algebra, Machine Learning

Experience

ASUCD Picnic Day — **Davis, CA**
Assistant Technical Director — *Nov 2025 – Present*
- Led a 4-engineer Agile team to ship a React/TypeScript event platform for 70,000+ attendees with a 4-tier ranked search engine (exact, substring, synonym expansion, Levenshtein fuzzy matching), interactive Leaflet map with auto-generated walking routes via Mapbox Directions API, and exportable PDF schedules.
- Eliminated 2 external runtime dependencies (Supabase, Google Sheets) by migrating to embedded SQLite, building a column-mapped CSV sync pipeline with coordinate normalization, upsert logic, and stale record purging behind bearer-token authentication.
- Dockerized the full-stack app, reducing onboarding setup to a single `docker compose up` command, and built a guided 8-step onboarding tutorial with spotlight overlays, keyboard navigation, and scroll-aware positioning.

Include — **Davis, CA**
Software Engineer — *Oct 2025 – Present*
- Built 10+ reusable Next.js components and a shared multi-page layout system for a 6-person Agile team, cutting new page development time by approximately 80% (from 2–3 days to under 4 hours).
- Authored mobile-first SCSS mixins adopted project-wide, resolving all reported cross-device rendering issues and establishing the team's responsive design standard.

Google Developer Student Club — **Davis, CA**
Software Engineer — *Oct 2024 – Jun 2025*
- Built a two-stage FAQ retrieval pipeline (Levenshtein fuzzy matching + keyword fallback) that reduced unanswered onboarding queries by 50% across a 100+ member organization.
- Automated 4+ weekly announcements via a Python/Flask Slack bot with a React/Firestore admin dashboard, saving officers an estimated 2+ hours/week of manual coordination.

Projects

dltracker – Deadlock Analytics Platform — *Next.js 16, TypeScript, Tailwind CSS 4, Prisma, PostgreSQL, Redis*
- Built a 10-page, 45-component analytics platform consuming Steam and Deadlock APIs, featuring player search via vanity URL resolution, hero/item win rates across rank brackets, 5-region leaderboards with a 3-signal identity disambiguation algorithm resolving up to 100 ambiguous entries per page, and match scoreboards with per-player item builds.
- Achieved production-grade reliability with IP-based rate limiting (10 req/60s via Upstash Redis), Zod input validation, Sentry error tracking, and 6-tier ISR caching (60s–24h) including an in-memory cache to handle a 2.5MB API response that exceeds Next.js's default fetch cache limit.

Song Popularity Predictor – ML Pipeline — *Python, TensorFlow, XGBoost, scikit-learn, Pandas, NumPy*
- Benchmarked 5 models on 32,000+ Spotify tracks; pivoted from regression ($R^2 \approx 0.20$) to binary hit classification after raw audio features alone explained minimal variance in popularity.
- Engineered artist average popularity and one-hot encoded genre/subgenre features with GridSearchCV tuning, boosting Random Forest to 80% accuracy (AUC 0.79), a 12-point gain over baseline Logistic Regression.

Kitch – Kitchen Management App — *Java, Spring Boot, React, Tailwind CSS, H2*
- Designed a full-stack kitchen management app with a 15-endpoint Spring Boot REST API across 3 controllers, 3-layer MVC architecture, a normalized 3-table schema with cascading deletes, and a global exception handler.
- Eliminated N+1 queries with JPQL fetch joins and built a transactional batch operation to auto-migrate zero-stock inventory items to the shopping list.

8-Bit CPU – Custom Processor — *Logisim, Digital Logic, Computer Architecture*
- Designed a 5-stage pipelined 8-bit CPU with data forwarding and hazard detection, correctly executing 20+ custom ISA instructions with zero pipeline stalls on forwarded operands.

Technical Skills

Languages: TypeScript, JavaScript, Python, Java, C, C++, SQL, HTML/CSS
Frontend: React, Next.js, Tailwind CSS, Framer Motion, SCSS, Leaflet, Mapbox GL JS
Backend: Node.js, Express, Spring Boot, Flask, Prisma, REST APIs
Data: PostgreSQL, SQLite, Redis, Supabase, Firestore
ML: TensorFlow, PyTorch, XGBoost, scikit-learn, Pandas, NumPy
DevOps & Tools: Git, GitHub Actions, Docker, Linux, Vercel, Sentry, Vitest