Gerardo Lopez Jr.

Software Engineer | Backend & Data

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EXPERIENCE

Software Engineer
Jan 2024 – Present

Digital Learning Lab | Irvine, CA | Full-time

- Designed backend data access patterns and ETL-style data flows (NoSQL) to support large-scale data retrieval, reducing query runtimes from 30 minutes to 3 seconds while improving data accuracy and consistency.
- Reduced backend Lambda execution time by redesigning batch-processing and pagination logic for large datasets, resulting in a 60% reduction in compute costs.
- Built an LLM evaluation platform enabling researchers to run 10,000+ messages from a CSV across 40+ models, exporting structured results and saving hours per study.
- Implemented Canvas LTI 1.3 launches and SSO using TypeScript and AWS (API Gateway, Cognito/OAuth, JWT, DynamoDB multi-tenant), enabling seamless access from Canvas across institutions.
- Served as release owner/on-call: approved merges, ran code reviews, and authored onboarding documentation (engineers and non-technical IT) for new institution rollouts.

Data Analyst
Jan 2024 – Nov 2024

CP-LEADS | Irvine, CA | Part-time

- Parsed and analyzed 100,000+ student messages (60 controlled users; 2 classrooms) with topic modeling and sentiment analysis (Python/R), surfacing guidance that helped instructors teach effective AI usage.
- Co-authored publication in *Computer Science Education* (DOI: 10.1080/08993408.2024.2396749).

Software Engineer Intern
Jun 2023 – Sep 2023

CodeAI | Remote | Full-time

- Shipped an internal Python package that generates complete HTML pages/sites from Google Colab notebook code, enabling non-web users to publish content quickly.
- Prevented regressions with 99% unit test coverage by implementing a comprehensive test suite.

Private Python Tutor
Nov 2021 – May 2023

Independent | Irvine, CA | Part-time

- Tutored 3–5 UCI students per session in Python (OOP, APIs, data analysis), building project-based lessons and repeatable debugging checklists to accelerate mastery.

SELECTED PROJECTS

Custom Inventory & Data Management System (Web + Mobile)
Aug 2025 – Present

- Built a backend-driven inventory system (Expo/React Native, React/TypeScript, Supabase) emphasizing data accuracy, reconciliation, and auditability across high-volume NFC scan events (1,000+ scans/day).

Multi-Mortgage Tracker (Commissioned; Web App)
Oct 2023 – Feb 2024

- Delivered a paid tracker for 6 users to manage multiple mortgages with shared status, amortization, and projections (React/TypeScript + Python + MongoDB; deployed on Google Cloud).

TECHNICAL SKILLS

Languages: Python, TypeScript/JavaScript, SQL (PostgreSQL, DynamoDB), C#, R
Cloud/Backend: AWS (Lambda, DynamoDB, API Gateway, Cognito, S3, Bedrock), AWS CDK, Docker
Data & Testing: pandas, NumPy, ggplot2, unit testing, performance/load testing
Tools: Git, GitHub, Postman, CloudWatch

EDUCATION

University of California, Irvine
Irvine, CA

B.S. Mathematics | AI in Education Research — Expected (part-time) Sep 2026
Coursework: Data Structures & Algorithms; Statistical Modeling; Linear Algebra; APIs/Sockets/Protocols

CERTIFICATIONS

AWS Certified Cloud Practitioner — Expected Jan 2026
Git Certification — Apr 2025
CITI Program Certification — Mar 2024