

Alejandro Valdez

626-975-6211 | [Email](#) | [Portfolio](#) | [GitHub](#) | [LinkedIn](#)

EDUCATION

University of California, Berkeley

Berkeley, CA

Bachelor of Science in Electrical Engineering and Computer Science

PROJECTS

F1 Strategy Analysis Platform | *Python, FastAPI, PostgreSQL, Redis, Celery, Docker* March 2026 – May 2026

- Built an end-to-end data pipeline ingesting historical F1 race data from the OpenF1 API into a normalized PostgreSQL schema across 7 entities including laps, stints, pit stops, and race control events, with idempotent upserts and proactive rate limiting.
- Implemented a three-stage Celery-based analytics pipeline computing per-stint tire degradation rates via linear regression, circuit-level tire life estimates aggregated across historical sessions, and lap-level pit window recommendations (EXTEND / PIT_SOON / PIT_NOW) persisted to derived tables.
- Designed explicit data quality policies across all compute layers — recommendations are only emitted when prerequisite analytics meet minimum evidence thresholds, avoiding speculative outputs.
- Exposed precomputed strategy outputs via a FastAPI REST API with async task queuing, Celery task status polling, and structured 404 responses for unscored laps
- Containerized the full stack (FastAPI, Celery, PostgreSQL, Redis) with Docker Compose and managed schema evolution with Alembic migrations.

Visual Menu | *Python, React, JavaScript, FastAPI, EasyOCR*

May 2025–June 2025

- Developed an OCR pipeline using FastAPI and React to digitize restaurant menus from uploaded images and PDFs, supporting structured data extraction at scale.
- Engineered a bounding-box classifier achieving 95% accuracy on single-column menu layouts.
- Designed an async REST API using parallelism to reduce menu visualization time from 30 minutes to 15 seconds.

EXPERIENCE

Software Engineer

July 2025 – December 2025

CTC Food International

Irwindale, CA

- Maintained and debugged JavaScript across live B2B platform pages serving 10K+ companies, achieving 99% uptime on critical customer-facing flows.
- Delivered iterative feature updates across login, checkout, and onboarding surfaces in an agile release cycle.

Software Engineer

May 2023–July 2024

Harvey Mudd College

Claremont, CA

- Built Python simulations modeling multi-agent behavioral dynamics across 3 behavioral modes (exploration, prestige, payoff), producing statistically reproducible outputs across thousands of experiment runs.
- Automated experiment pipelines that generated structured CSV and database outputs, eliminating manual data collection and enabling systematic parameter sweeps.
- Refactored monolithic simulation components into modular, independently testable Python classes, improving extensibility and reducing experiment iteration time.

Software Engineer

August 2020–December 2020

National Aeronautics and Space Administration (NASA)

Whittier, CA

- Engineered autonomous navigation systems in C++ integrating IR and ultrasonic sensor fusion with servo-controlled actuation, achieving 90% navigation accuracy across obstacle courses.
- Implemented maze-solving decision logic with real-time sensor input processing and hardware-validated motor response timing
- Validated system reliability through iterative hardware-software integration testing across physical test runs.

TECHNICAL SKILLS

Languages: Python, SQL, C++, JavaScript, Typescript

Frameworks & Tools: FastAPI, React, Docker, Celery, Redis, SQLAlchemy, Alembic, NumPy, Git, REST APIs

Databases: PostgreSQL, Redis, Firestore