

Aarav Modi

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TECHNICAL SKILLS

Languages: Python, TypeScript, JavaScript, SQL, Java, C++, HTML/CSS

Frameworks: React, Next.js, Django, FastAPI, Flask, Node.js, Express, Spring Boot, Tailwind CSS, Angular

Tools: PostgreSQL, Dagster, Docker, Git, Azure DevOps, GCP, AWS, Pandas, NumPy, Codex, Claude Code

EDUCATION

University of Waterloo

Bachelor of Applied Sciences in Systems Design Engineering

Expected May 2029

Waterloo, Canada

EXPERIENCE

Founding Software Engineer

Enerzen

Aug 2026 – Present

Ontario, Canada

- Built **Enerzen Performance Engine**, converting **Ontario land data** into energy-optimized residential site plans.
- Engineered a backend pipeline to ingest parcel data, validate **20+ site constraints**, generate **OpenUSD** scenes in **NVIDIA Omniverse**, run **10,000+ EnergyPlus simulations**, and rank designs energy performance.
- Own software architecture and implementation across a **4-person founding team**, deploying the platform for a **Mississauga pilot** and supporting planned expansion to **Pickering and Dryden, Ontario**.

Software Engineering Intern

Upside Robotics

Jan 2026 – Aug 2026

Waterloo, Canada

- Engineered a **PostgreSQL-to-Redshift ETL pipeline** on **AWS EC2 and S3**, loading **500K+ rows daily** via **Redshift COPY** and IAM-backed staging instead of row-wise inserts, cutting warehouse load times by **80%**.
- Architected a **production FastAPI backend** with **48 endpoints across 12 domain modules**, integrating **AWS ECS, RDS PostgreSQL, Redis, and Redshift** with read/write pools and TTL/SWR caching, reducing operational metric retrieval from **weeks to minutes** for **35+ employees and executive stakeholders**.
- Migrated high-frequency robot telemetry from polling to **WebSockets and Zenoh pub/sub**, redesigning the real-time data path across production services and reducing end-to-end message latency by **50%** across **40 fields**.
- Built **5 production data services** on AWS EC2/ECS, scheduling **cron jobs** for sensor, fleet, weather, and crop telemetry, with **materialized views** for aggregation and Slack/SMS alerts surfacing failures in under **5 minutes**.

Software Engineering Intern

Canadian Imperial Bank of Commerce (CIBC)

Aug 2025 – Dec 2025

Toronto, Canada

- Built **React-Django** dashboard for **25+ projects**, batching **REST APIs** to cut JIRA calls by **67%**.
- Engineered **Dagster ETL pipelines** for **100GB+ data**, saving **2+ days** monthly via parallel orchestration.
- Developed a **Python/GraphQL GitHub** activity tracker for **40+ offshore engineers** using **Redis** to automate velocity analytics and provide **automated stakeholder reporting** across **500+ monthly commits**.
- Implemented **Jenkins/Docker CI** pipelines and **PostgreSQL read replicas** supporting high-availability reporting systems, sustaining **99.9% uptime** under **15k+ concurrent query loads**.
- Integrated **ML models** via **Scikit-learn** and **FastAPI** to detect anomalies, cutting debugging time by **40%**.

PROJECTS

CRai (Cry-Analyzer AI) | *Python, Librosa, FastAPI, Modal, TensorFlow*

Sep 2025

- Built an **ML pipeline** using **Librosa** to classify **neurological risk indicators** from infant cry patterns.
- Trained **CNN models** on **MFCC and spectrogram** features, achieving **92% accuracy** on labeled datasets.
- Deployed inference APIs via **FastAPI on Modal**, optimizing latency through **request batching** and integrating **Suno** for adaptive, AI-generated acoustic responses based on real-time classification.
- Presented at **HackMIT 2025**, recognized for innovation in **AI-driven signal analysis** and cloud deployment.

Founder - LockerLink.ca | *Next.js, TypeScript, Firebase, PostgreSQL, Tailwind CSS, Computer Vision*

Nov 2025

- Launched a social platform for OVA volleyball athletes and coaches with **100+ users** across **15+ Ontario clubs**.
- Designed backend data models supporting **1,000+ profile attributes** and **300+ athlete-coach connections**.
- Used **SAM3** and pose estimation to extract performance metrics (e.g., vertical jump, spike velocity) from video.