

Axel Sanchez

Calgary, Alberta, Canada | axelshz@gmail.com | 403 390 3596 | axelsanchez.me | linkedin.com/in/axel-sanchez-a1089b23a | github.com/Axeloooo

Education

University of Calgary, Master of Science in Electrical Engineering

- GPA: N/A

September 2026 – April 2028

University of Calgary, Bachelor of Science in Software Engineering

- GPA: 3.4/4.0

September 2021 – April 2026

Experience

Undergraduate Researcher, University of Calgary – Calgary, Alberta

September 2025 – Present

- Designed and implemented **BridgeMart**, a cross-chain data marketplace enabling trustless dataset listing, semantic discovery, and purchase using LLM-based embeddings, smart contracts, and off-chain storage
- Developed a privacy-preserving data vending pipeline where sellers publish encrypted datasets and vector embeddings to IPFS, with integrity anchored on-chain via cryptographic hashes and purchase-gated access control
- Enabled semantic dataset retrieval by encoding tabular data and natural-language queries into a shared embedding space and performing similarity search, allowing data discovery without exposing raw contents

Software Engineer Intern, Microsoft – Vancouver, British Columbia

May 2025 – August 2025

- Implemented custom CUDA all-reduce for intra-node tensor parallelism on NVIDIA H200 clusters; integrated as a TensorRT all-reduce plugin with P2P/NVLink fallback in C++
- Built GPU communicators and kernel launchers in C; benchmarked against NCCL and tuned GEMM paths across FP16/FP32
- Synthesized peer-reviewed literature with internal constraints and translated findings into system designs and reproducible experiments in collaboration with research/AI teams

Full Stack Engineer Part-Time, Agrivanna – Calgary, Alberta

September 2024 – April 2025

- Architected RESTful microservices in Go, Java/Spring Boot; integrated a scikit-learn Gradient Boosting model to deliver personalized health recommendations
- Operationalized a supervised time-series model in PyTorch for livestock health prediction from Kafka streams; persisted features in PostgreSQL and shipped a FastAPI service as a Docker image on Kubernetes
- Mentored team DevOps by mentoring an engineer through hands-on Docker/Kubernetes workshops and deployment best practices

Cloud Developer Intern, Aptum – Calgary, Alberta

May 2024 – April 2025

- Administered production/dev environments with Terraform and Helm on Kubernetes; doubled processing throughput by orchestrating Jenkins cron pipelines
- Refactored a legacy monolith into gRPC-based microservices using Java, Spring Boot, and MySQL, improving scalability and boosting performance by 66%
- Accelerated onboarding for new interns through stack documentation and DevOps runbooks, reducing time-to-productivity

Vice-President Software Development, Student Energy UCalgary – Calgary, Alberta

September 2023 – April 2024

- Launched an interactive chapter news web app with Next.js/TypeScript, increasing engagement by 70% and stabilizing UI state with Redux
- Automated infrastructure provisioning and hosting on AWS using Terraform and GitHub Actions CI/CD, cutting deployment time and improving release reliability
- Directed chapter-wide hiring: led interviews for junior engineers, defined selection rubrics, and authored succession guidelines for future executives

Backend Engineer Part-Time, ReThread – Calgary, Alberta

September 2023 – April 2024

- Engineered TypeScript/Express microservices with Redis caching; reduced latency and deployed on Kubernetes in AWS
- Prototyped a PyTorch CNN for fabric classification; managed datasets in Amazon S3 and shipped Docker images via Jenkins to Kubernetes
- Instituted Git workflows and GitHub Actions standards (branching, code review, CI), elevating code quality and delivery cadence

Software Engineer Intern, Sigma Foodservice – Calgary, Alberta

May 2023 – August 2023

- Integrated the Copomex API into location services using C# and .NET for 10,000+ locations, improving address accuracy by 80%
- Delivered end-to-end tests and a Jenkins CI/CD pipeline for the eCommerce UI with JavaScript and Playwright, cutting QA effort by 98.75% and increasing deployment frequency
- Facilitated sprint reviews with business stakeholders, aligning scope and priorities through actionable feedback

Frontend Engineer Part-Time, Bandist – Calgary, Alberta

September 2022 – April 2023

- Integrated Ticketmaster and Spotify APIs into a Python/Django monolith, reducing registration friction and cutting development costs by 20%; managed PostgreSQL and GCP hosting for 10,000+ monthly active users (MAU)
- Shipped a cross-platform mobile app in Flutter/Dart to the Apple App Store and Google Play; maintained 99.95% uptime on Firebase
- Produced iterative Figma prototypes; synthesized user feedback into UI/UX improvements and developer-ready handoffs

Projects

DeFi Stablecoin

- Engineered a decentralized stablecoin smart-contract system in Solidity, enabling algorithmic minting/redemption and maintaining a USD peg with exogenous ETH and BTC collateral on EVM-compatible networks

- Implemented automated unit/integration tests and security checks with **Foundry (Forge)** to verify correctness, reentrancy safety, and gas usage
- Automated deployments and network integrations using **Forge** scripts and reproducible workflows (ABI generation, address registry, verifications) across testnet/mainnet

Ride Sharing

- Architected a **microservices** platform in **Go** and **TypeScript** with an API gateway plus driver, trip, and payment services; containerized with **Docker** and orchestrated on **Kubernetes**
- Built end-to-end ride matching, trip scheduling, and payment workflows: request intake, driver ranking/selection, trip state management, and transaction processing using **RabbitMQ** and **Stripe**
- Established **CI/CD** and environment automation using **Tilt**, Docker, and Kubernetes manifests to enable automated builds, blue/green rollouts, and horizontal scaling

ChoreShare

- Delivered a cross-platform roommate task app: **React/React Native UI**, **Spring Boot** services, and **PostgreSQL** persistence, improving shared household task management
- Secured authentication/authorization with **JWT** and role-based access controls (RBAC); enforced protected routes and data isolation
- Provisioned cloud infrastructure on **GCP** with **Docker**, **Kubernetes**, **Terraform**, and **Jenkins** to automate CI/CD and ensure high availability and autoscaling

The Last Show

- Launched a serverless web application with **React** (frontend), **AWS Lambda (Python)** (backend), **Terraform**, and **DynamoDB** to generate personalized obituaries via **OpenAI** and deliver audio with **Amazon Polly**
- Integrated **Cloudinary** for image/audio asset storage and streaming; implemented REST APIs to upload, retrieve, and play obituary media
- Defined **Infrastructure as Code (IaC)** in Terraform for Lambdas, IAM, storage, and VPC networking to enable repeatable, scalable deployments

Certifications

AWS Certified Cloud Practitioner, Amazon Web Services

May 2024

Microsoft Certified Azure Fundamentals, Microsoft

February 2025

Skills

Programming Languages: C, C++, C#, Java, JavaScript, TypeScript, Python, Go, Golang, Rust, PHP, Swift, Dart, Kotlin, Ruby, Solidity, Shell Scripting, PowerShell, SQL, NoSQL

Frameworks & Libraries: .NET, Spring Boot, Express, Django, Flask, FastAPI, React, Next.js, Vue.js, VueJS, Redux, Tailwind, Vite, Expo, Flutter, jQuery, Less, CSS, Framer Motion, GraphQL, Prisma, PyTorch, CUDA, NCCL, JWT, JUnit, Jest, Spock, Cucumber, Playwright, Selenium

Cloud & DevOps Technologies: Azure, AWS, GCP, AWS DynamoDB, AWS VPC, AWS Lambda, AWS CloudWatch, AWS Secrets Manager, AWS Polly, Kubernetes, Docker, Helm, Terraform, Ansible, Jenkins, GitHub Actions, Azure Pipelines, Azure DevOps, Nginx, Apache, Kafka, RabbitMQ, gRPC, Containerization, Infrastructure as Code, CI/CD, Cloudinary, Distributed Systems, Distributed and Parallel Systems, Microservices, API Design, MLOps, Performance Optimization

Databases, Tools & Other Technical Skills: MySQL, PostgreSQL, MongoDB, Firebase, Blockchain, Fintech, Machine Learning, Natural Language Processing, Large Language Models (LLM), ChatGPT, Gemini, Claude, Grok, Mathematics, Statistics, Data Structures, Algorithms, Operating Systems, Linux/UNIX, MacOS, TCP, UDP, Software Development Life Cycle, Automated Tests, Version Control, Git, Atlassian, Jira, Trello, Confluence, Figma, SAP, REST APIs, Ecmas, UI Development, Mobile Development, Code Review, Project Management, Design Patterns, SaaS, PaaS, IaaS, Postman

Soft Skills: Analytical problem-solving, Technical communication, Leadership, Mentorship, Cross-functional collaboration, Initiative, Ownership, Empathy, Stakeholder management, Prioritization, Time management, Decision making, Conflict resolution, Adaptability, Accountability, Attention to Detail, Communication Skills, Content Management, Team Collaboration, Troubleshooting, Risk Management, Active Learning, Talent Development