

Juan Diego Serrato

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PROFESSIONAL SUMMARY

Junior Full-Stack Engineer with experience designing, building, and deploying full-stack web applications using React, Next.js, TypeScript, Node.js, and PostgreSQL. Strong foundation in software engineering, distributed systems, cloud deployment, and database design. Proven ability to take projects from concept to production while solving complex technical problems and delivering user focused solutions.

TECHNICAL SKILLS

Programming Languages: TypeScript, JavaScript, Python, Java, SQL, C, C++

Frontend: Next.js, React, Tailwind CSS, HTML/CSS

Backend: Node.js, REST APIs, NextAuth.js, Prisma ORM

Databases: PostgreSQL, Supabase

Tools & Platforms: Git, GitHub, Docker, Vercel, Linux, Unix, CI/CD

PROJECTS

Jobsheets | Full-Stack Web Application

Live: <https://jobsheets.ca>

- Designed, developed, and deployed a production-ready job application tracking platform used by early users.
- Built secure authentication and authorization using NextAuth.js, JWT sessions, and bcrypt password hashing.
- Designed a normalized PostgreSQL database supporting application tracking, analytics, and historical status reporting.
- Developed interactive dashboards enabling users to monitor application activity and response trends.
- Implemented CI/CD pipelines through GitHub Actions and automated deployments on Vercel.
- Containerized application services with Docker to streamline development and deployment workflows.

Insurance Risk Model | Python, Scikit-learn, NumPy

- Developed machine learning models using over 100,000 records to predict insurance claim probability.
- Evaluated model performance using cross-validation techniques and classification metrics.
- Built portfolio optimization logic to maximize expected profitability under capital allocation constraints.
- Applied statistical analysis and expected utility concepts to support data-driven pricing decisions.

Distributed Systems | Java

- Designed and implemented distributed messaging services using Lamport Logical Clocks and Total Order Broadcast protocols.
- Built failure detection mechanisms using heartbeat monitoring for node health tracking and recovery.
- Developed fault-tolerant distributed architectures with replicated state management.
- Progressively evolved system design from client-server architecture to peer-to-peer distributed systems.

Custom Linux Shell | C, Unix

- Built a fully functional CLI from scratch using **Linux system calls** — process management, I/O redirection, and piping without relying on high-level C standard library abstractions.

Atari 2D Game Engine | Low-Level C, Motorola 68000

- Wrote custom hardware drivers for the **YM2149** sound chip and a raster graphics library, interfacing directly with the **MMU** and bypassing OS dependencies entirely.
- Achieved stable **70fps** by synchronizing double-buffering logic with the hardware **70Hz VSYNC** signal, eliminating screen tearing.

EDUCATION

Mount Royal University

B.Sc. in Computer Science — Minor in Business

- GPA: 3.48 — **Dean's Honour Roll:** Winter 2022, Winter 2024, Fall 2024

Calgary, AB
Graduated Jan 2026

Southern Alberta Institute of Technology (SAIT)

Mechanical Engineering Technology Diploma

Calgary, AB
2019

WORK EXPERIENCE

Solar Technician

2020

Determination Drilling

- Served as sole QA technician on the Alberta Solar One site, independently owning all pile installation tolerance verification — no oversight, full accountability
- Coordinated QA data collection across a team of technicians on a separate site, consolidating field measurements and ensuring reporting accuracy for engineering sign-off
- Deployed and maintained a fleet of 10 iPads for field QA operations — handled device setup, onboarded new arrivals, and resolved data sync failures via mobile hotspot configuration
- Diagnosed cold-weather battery drain issues and independently introduced portable chargers and styluses across the team, eliminating downtime and allowing gloved operation in subzero conditions

Surveyor

2021

Construction Surveying Canada

- Identified a per-pile bottleneck in I-beam orientation marking caused by heavy steel templates, independently designed and 3D printed a lightweight scale replica — reducing the tool from 20lbs to ~30g (lanyard-portable), cutting marking time per pile by ~3x (from ~60s to ~20s), and distributed to all 4 surveyors on the team
- Performed high-precision GPS survey work on large-scale solar installations, placing structural markers within 2mm tolerance specifications — measurements fed directly to engineering teams for sign-off
- Applied laser alignment across uneven terrain to evaluate pile rows and mark structural cut lines for welding crews, ensuring flush solar panel mounting on hilly sites
- Collaborated with engineering and construction teams to ensure accurate structural layout and installation.