Diego Gonzalez

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Education

University of Waterloo Sep. 2025 – Apr. 2030
Bachelor of Mathematics, Honours, Data Science Major *Waterloo, ON*

- **GPA:** 3.9/4.0
- **Relevant Coursework:** Probability, Linear Algebra, Multivariable Calculus, Algorithm Design & Data Abstraction

Experience

Data Scientist Intern Jan. 2027 – Apr. 2027
Scotiabank *Toronto, ON*

- Incoming Winter 2027

Tech Lead & Consultant May 2026 – Present
Sun Strategy Group *Toronto, ON*

- Directed a **team of 3** across **6 client projects** for small and medium-sized businesses (**SMBs**) across **Ontario**.
- Owned the firm's tech workstream, leading client recommendation calls to diagnose client needs and deliver actionable strategy.
- Created and launched **sunstrategygroup.ca**, drawing more than **60 unique visitors** and converting over **10%** into clients.

Lead Instructor May 2026 – Sep. 2026
Code-It Hacks (Microsoft & Google Backed) *Toronto, ON*

- Designed and led project-based curriculums spanning **Python**, **ML**, **CV**, and **VR** development for over **100 students**.
- Translated advanced technical concepts into age-appropriate, hands-on lessons which gave students exposure to industry tools.
- Guided **20+ students** through design and iterative problem-solving, increasing prototype development speed by ∼**30%**.

Projects

Reducing False-Positive Rates in Fraud Detection | *Technical Report* May 2026 – Jul. 2026

- Researched why **ML-based** transaction fraud models flag so much legitimate activity while missing fraudulent transactions.
- Reviewed **14** academic and industry sources on **ML** methods for data where fraud makes up under **1%** of transactions.
- Compared Synthetic Minority Over-sampling Technique (**SMOTE**), Under-sampling, Cost-sensitive Learning, Ensemble Methods, and Threshold Tuning against bank constraints like model risk review, calibration, and concept drift.
- Derived a cost-based alert threshold of **3.8%** versus the default **50%**, and showed raising precision at a fixed alert budget from **19.4%** to **40%** would **double** frauds caught per analyst-shift.

Midas | *Python, JavaScript, Next.js, FastAPI, YOLOv11, OpenCV* Feb. 2026

- Built a real-time **AR** repair assistant with **Next.js**, **FastAPI**, and **YOLOv11**, that guides users through step-by-step repairs.
- Reduced **OpenAI** and **YOLOv11** API calls by **99.2%** (roughly **120x** fewer) by processing only key frames, lowering inference costs while keeping the real-time **AR** repair assistant responsive.
- Deployed the **CV** inference as a **FastAPI** endpoint that returns detections to the front end with ∼**150ms** average latency.

Duolingo for ASL | *Python, PyTorch, pandas, OpenCV, MediaPipe, SQLAlchemy* Jan. 2026

- Built an AI-powered **ASL** recognition app with a custom-trained **PyTorch** model on **70,000+** images, using feature engineering on **MediaPipe** hand landmarks to reach **90%+** accuracy on real-time inference.
- Designed a modular **ML** pipeline separating training, inference, and data processing, improving experiment iteration speed by **50%** and supporting rapid model evaluation and fine-tuning cycles.
- Implemented **SQLAlchemy** database to track user progress and sign-level accuracy across lessons, keeping the data clean.

AI Chess Bot | *Python, PyTorch, Modal, Weights & Biases* Nov. 2025

- Built a chess engine powered by a **PyTorch** neural network achieving ∼**1600 ELO**, using **Weights & Biases** to track experiments, compare training runs, and guide iterative model evaluation and performance tuning.
- Improved move search efficiency by **50%** by implementing a minimax search algorithm with decision tree pruning.
- Reduced training time by **90%** by designing an end-to-end **ML** pipeline on **Modal** cloud infrastructure, enabling scalable batch training on large datasets.

Technical Skills

Languages: Python, SQL, C++, C, Java, JavaScript, TypeScript
Data & ML: PySpark, PyTorch, NumPy, pandas, scikit-learn, Modal, OpenCV, Weights & Biases
Web: FastAPI, Flask, Next.js, Node.js, React, Vercel
Infra & Tools: Azure, Git/GitHub, Jupyter, Linux, PostgreSQL, Power BI, VS Code