

EXPERIENCE

• SOLIS

Electronics Designer, Contract

Calgary, AB

Jul 2024 - Present

- **Embedded Development:** Developed firmware for the ESP-IDF and STM32 platforms to serialize and transmit 4K pixel CCD images to a computer via serial connection.
- **PCB Design:** Designed, procured, and tested product boards containing microcontrollers, optical sensors, and USB-C connectors. Used KiCAD extensively for product design.
- **Optical Device Design:** Designed and prototyped a NIR micro-spectrograph using advanced hardware miniaturization techniques and fiber optic technology to save \$200k on material and assembly costs. Oversaw E-commerce shop creation for finished product.

• WSP Canada

Project Engineering Intern

Calgary, AB

Jan 2022 - Jan 2023

- **Mechanical Design:** Audited and red-lined piping and instrumentation diagrams for multiple oil & gas capital improvement projects worth over \$150 million. Performed piping stress calculations for over 3 kilometers of 42" OD pipeline to ensure compliance with B149 and other applicable standards. Performed heating calculations to facilitate the commissioning of multiple HVAC units.
- **Procurement:** Authored quotation requests and oversaw the appraisal and procurement process on over \$88 million of oil and gas assets, including piping, valves, pipe fittings, remote buildings, and HVAC units. Communicated with vendors as a consultant on behalf of WSP's client, Enbridge, to fulfill the scope of requirements on time. Navigated inflated lead-times during the tail-end of the pandemic.
- **Engineering Automation:** Developed scripts to automate the process of comparing current MTO (material takeoff) line-items to exports generated automatically by AutoCAD technicians working on a separate team. This allowed over \$20 million in erroneous procurement to be avoided, and additionally saved months of lead time on project delivery.

Automation Engineering Intern

Jan 2022 - Jan 2023

- **Logic Controller Programming:** Programmed PLC controllers to regulate the duty cycle of pumps in multiple heat exchanger stations for the ESAP federal heating upgrade, contributing to an annual net power savings for the Canadian federal government of over 80 MW. Integrated the PLC into the building's existing SCADA system.
- **Instrumentation Drafting:** Effectively managed two subordinate draftspeople on the ESAP heating upgrade in Ottawa, and audited final network drawings with respect to internal documentation. Oversaw the authoring of over 200 pages of networking documentation on behalf of the federal government. Developed a software system for auditing and correcting instrument index line items against prior versions, color-coding and raising line-items with changes or discrepancies to aid in engineering review. Saved over 100 hours a week of budgeted engineer hours for the duration of the project.

• Global Quantitative Strategies, Citadel

Visiting Quantitative Researcher, Remote

New York, NY

Sept 2020 - Apr 2021

- **Machine Learning:** Implemented and optimized LightGBM in hardware using SystemVerilog for deployment on Xilinx FPGAs in high-frequency securities trading environments.

• SensorUp

Data Scientist

Calgary, AB

Sept 2018 - Sept 2020

- **Computer Vision:** Fine-tuned and deployed hazard detection models on edge devices to 400 remote industrial sites using AWS Lambda, DeepStream, and YOLO, reducing average hazard reaction time by 75%.

PROJECTS

- **ML Delivery Toolkit:** Processes and heuristics for evaluating and operationalizing machine learning systems.
- **M2K Classifier:** Identifying child-appealing marketing with computer vision and natural language processing.
- **IHL:** Research DSL for structured programming of LLM-based applications as a type-safe alternative to DSPy.

EDUCATION

- **University of California, Berkeley** Berkeley, CA
Doctor of Philosophy in Computer Science (In Progress) *Sparsity in Clickstream Inference*
Bachelor of Science in Computer Science and Statistics (summa cum laude) *Statistical Machine Learning*

SKILLS

- **Languages:** Python, SQL, Go, C, Scala, JavaScript, OCaml, ReasonML, CUDA, MLIR, SystemVerilog, L^AT_EX
- **Technologies:** AWS, GCP, Terraform, Docker, Kafka, Trino, Spark/MLlib PyTorch, JAX/XLA, scikit-learn, spaCy

MANUSCRIPTS IN REVIEW

- **MarkovEFB:** Improving sparse clickstream gradient boosting with Markov-modulated exclusive feature bundling.
- **LegalCoder:** Automating formal verification of legislative texts using language model annotators for the Catala DSL.
- **InaraNet:** Antimicrobial peptide recognition with involutional and long short-term memory neural networks.

AWARDS AND GRANTS

- **Citadel GQS Fellowship:** One-year PhD fellowship providing US\$100,000 in research funding (2×).
- **NSERC PGS Doctoral:** Three-year PhD scholarship providing CA\$63,000 in research funding (1×).
- **Fulbright Canada Student:** One-year undergraduate grant providing US\$25,000 in funding (3×).

PREVIOUS EXPERIENCE

- **Sprout Fund I/II** Edmonton, AB
Venture Capital Advisor, AI/ML *Sept 2020 - Present*
 - **Investment Analysis:** Evaluated 40+ ML-focused startup companies for technical viability and product-market fit, providing decision support and knowledge translation to the investment management team.
- **Redman Technologies** Edmonton, AB
Software Engineer (Internship) *Summer 2017, 2018*
 - **Full-stack:** Built a visualization platform for neighborhood statistics using CouchDB, Node.js, and Express deployed to 1400+ Realtors across Canada.
- **Mozilla Foundation** Portland, OR
Compiler Engineer (Internship) *Summer 2016*
 - **Memory Allocation:** Designed and implemented a type-partitioning memory allocator used in experimental browser engines, scripting language runtimes, and just-in-time compilers.