Sheldon Frith
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https://sheldonfrith.com

Sheldon Frith - CV

A software developer with a proven track record of delivering novel full-stack solutions. Strong technical abilities, excellent communication skills and a lifelong-learner attitude.

Software Project Highlights

Ground Properties Predictor | app.umny.ca
Objective: Improve geothermal performance, reduce project risk and feasibility costs by remotely predicting ground properties
Tech Stack:

- *ML Development*: Custom-built HPO and data-processing software
- *Backend and Feature Server*: GDAL, Flask, nest.js
- *ML Models*: Custom ensemble using PyTorch and scikit-learn
- *Frontend*: Typescript, next.js, Stripe, Autho

Impact: Achieved world-wide average error of less than 1 °C, for predictions of below-ground temperatures. Created new soil thermal conductivity model 33% more accurate than previous state-of-the-art models. Save clients weeks of time, and an average of $50k per project.

Geothermal Monitoring and Control Software | Sales Page
Objective: Remote monitoring and control of experimental and cutting-edge Geothermal HVAC systems, including scheduling and safety fallback operations.
Tech Stack:

- *Backend:* C++ ASP.NET Core
- *Database*: MySQL RDS
- *Frontend*: Next.js, Typescript
- *HVAC Control*: Distech EC-gfxProgram

Impact: Enabled remote control, reducing the need for on-site visits by 100% and saving the client an estimated 40% of maintenance hours per month. Improved functionality and adaptability of the system, meeting specific client needs that the previous monitoring software could not.

GeoPile Predictive Software | Demo Video
Objective: Automatic design and optimization software for Geothermal pile HVAC systems
Tech Stack:

Backend: C++ ASP.NET Core
Database: MySQL
Frontend: React.js
ML Models: custom scikit-learn ensembles

Impact: Cut design time from months to minutes, and cut costs by an order of magnitude, allowing rapid design iterations and quicker project turnaround

Languages
Typescript + JS
C#
Python
C++
Rust
PHP

Back End
ASP.Net Core
MVC
Nest.js
Flask
Laravel
Bevy

Front End
React
Next.js
CSS/SASS
styled-components
tailwindcss

Machine Learning
PyTorch
SKLearn
Optuna
GDAL
OsGEO

Databases
MySQL, SQLite
Relational Databases

Integrations
Stripe
Telegram
Shopify
Auth0
Cognito
Google Maps
ChatGPT

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Recent Personal Projects

Selected projects from 17+ years of software development:

GPU-Accelerated Collision Detection

Bevy + Rust project demonstrating performance gains for massive-scale collision detection using GPU shaders (Vulcan + WGSL). (github.com/Sheldonfrith/gpu_collision_detection_bevy)

Local Jargon Translator

Demonstration of LLM API integration into custom web apps, utilizing prompt engineering (RAG, ToT, chaining, etc.) to generate improved translations for travelers abroad. (sheldonfrith.com/translator)

WASM Speed Tester

Demonstration web app for testing the execution speed of various sorting algorithms comparing C++ Web Assembly to regular JavaScript (sheldonfrith.com/wasm-speed-tester).

C++ ML Framework

End-to-end ML model creation framework, including novel HPO algorithms, data splitting algorithms and meta-learning, designed to allow training on edge devices.

Work Experience

Lead Software Developer

Umny Inc.

May 2021 – Present

- Lead all software development and related tasks (architecture decisions, AWS, sysadmin, database design, etc.)
- Build all Machine Learning models used in software (mostly deep neural networks) from end to end, including data generation, data collection, data processing, feature selection, model/algorithm selection, HPO, validation, testing, serialization and deployment.

Lead Software Developer

Sharp AR

Sept 2020 – May 2021

- Built a custom Shopify plugin/app to allow easier, more customizable Augmented Reality (AR) integration into stores.
- Built an embeddable AR service (built on Google's "model-viewer") which could work in any existing website.

Education

Bachelor of Mathematics and Computer Science

Athabasca University

Expected Graduation: December 2026

Additional Skills and Experience

- Bilingual: Native English speaker and fluent in Spanish
- Self-management on long-term projects
- Team collaboration in diverse, cross-functional teams
- Advanced mindfulness training with demonstrated focus and stress management capabilities