Evan Loughlin

Software Engineer • AI / ML

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Portfolio: https://e-loughlin.github.io

Work Authorization: Canada: Citizen • Australia: Permanent Resident (Subclass 189 Visa)

Summary

I am a Software Engineer with over 7 years of professional experience across several industries: Unmanned Aerial Vehicles, Medical Imaging, High Performance Computing (distributed computing, graph algorithms, supervised / unsupervised learning), Marketing Tech, and Civil / Electrical Engineering software. Former career in Civil Engineering (4 years exp - buildings, bridges, marine, geo, oil & gas). I love building cool things and working with smart people on challenging, interesting projects that make people's lives better.

Education

- **Georgia Institute of Technology** — Atlanta, Georgia
  MSc Computer Science - Machine Learning / A.I.; GPA: 3.6 / 4.0 — *Jan. 2019 – Apr. 2024 (part-time)*

University of Calgary — Calgary, AB

- *Bachelor of Science in Computer Science; GPA: 3.4 / 4.0* — *Sept. 2016 – Jul. 2018*
- *Bachelor of Science in Civil Engineering; GPA: 3.4 / 4.0* — *Sept. 2007 – May. 2012*

- **Universität Stuttgart** — Stuttgart, Germany
  International Exchange: Computational Mechanics of Materials Program (COMMAS) — *Jan. 2011 – Aug. 2011*

Skills

- **Languages**: Python, Go, C/C++, C#, Dart, Typescript, Javascript, Bash
- **Libraries**: PyTorch, SKLearn, Pandas, Numpy, OpenCV
- **Cloud / Infra**: AWS, GCP, Terraform, Github Actions
- **Web Frameworks**: React, Django, HTML5/CSS
- **Databases**: PostgreSQL, GraphQL, CouchDB, Redis
- **ML/AL**: Deep Learning, CNN, LLMs, KNN, Boosting, Decision Trees / Random Forest, SVMs, SLAM, Randomized Optimization, Reinforcement Learning (Q-Learning), Computer Vision, Computational Photography, Search Algos

Software Engineering Experience

- **Neara** — Sydney, Australia
  Software Engineer — *Nov 2024 – Present*
  - **Overview**: Browser-based, physics-enabled digital twin platform for powerline and utility network modeling. Worked on FEA modeling, rendering engine development, crash reporting services, and Aerial Photography mapping.
  - **Skills**: Dart, C++, Python, Rust

Software Engineering	• Improved performance and convergence of Finite Element Analysis (FEA) engine for structural strength and deflection modeling. • Multi-threaded the 3D rendering engine by splitting into render and host frames. • Built an alerting service in Python to route crash reports directly to responsible codeowners. • Improved tooling for converting ECW aerial photography into 3D world viewer tiles.

- **Highlight** — New York, NY / Remote
  Software Engineer - Data Analytics — *Aug 2022 - Aug 2024 (2 Years)*
  - **Overview**: Full stack software engineering and Machine Learning for Marketing Tech Startup. Developed Live Dashboard for marketing and analytics, supporting 50,000 users.
  - **Skills**: C#, Go, AWS, Python, React, Typescript, GraphQL, PostgreSQL, Terraform, SKLearn, PyTorch

Software Engineering	• Implemented an event-driven E-mail and Slack notification system using AWS SQS. • Developed a Live Dashboard (React front-end, C# back-end) for Data Analytics and real-time visualization.
Machine Learning / AI	• Designed and implemented a Genetic Algorithm for distribution & shipping optimization. • Researched and implemented LLMs for Qualitative Data analytics. • Built a ML model (XGBoost / Random Forest) predicting trends & correlations in demographic and marketing data.

- **Cerio (formerly Rockport Networks)** — Ottawa, ON / Remote
  Modeling and Simulation Engineer (R&D) — *Mar 2021 - Aug 2022 (1.5 years)*

  - **Responsibilities**: R&D for Rockport's switchless HPC network solutions; Myriad responsibilities including tool development for network studies / data analytics, conducting experiments, simulation, and visualization to inform decision making and prioritization.
  - **Skills**: Go, C++, Python, SKLearn, Docker, Kubernetes

Software Engineering	• Built a CLI Tool in Go (RPCLI) for Network Analytics, Debugging, Data Extraction, Node State Modification used by both Field Engineers and R&D • Built a tool for processing DUMPI Network Trace File data - MPI (Parallel Computing) standard - to optimize and study distributed computing network behaviour
Machine Learning / AI	• Investigated the use of unsupervised and time-series ML approaches to analyze, predict, and learn network optimizations .

- **Circle Cardiovascular Imaging** — Calgary, AB
  Software Engineer - Medical Imaging — *July 2019 - Dec 2020 (1.5 years)*

  - **Responsibilities**: Software development for CVI42 (Cardiovascular MRI Imaging Suite) and CPU Vectorization (SIMD) libraries on Windows and Linux (GE Platform). Implemented Convolutional Neural Networks for medical imaging.
  - **Skills**: C++, SIMD Vectorization, Computer Vision, CNN, Qt5 Development, Bash Scripting, QML, Go, Python, GDB Debugging, Google Test, Git, CMake. Exposure to OpenGL and multi-threading.

Software Engineering	• Independently designed and implemented a number of projects including a Crash Reporter, C++ Clean Architecture Code Generators, a SIMD Vectorization templated code generator, and a Server Test Harness
Machine Learning / AI	• Optimized Computer Vision algorithms using Vectorization and SIMD libraries for improved performance on GPU-less MRI machines.

- **Lockheed Martin** — Calgary, AB
  Software Engineer — *Aug 2018 - July 2019 (1 year)*

  - **Responsibilities**: Developed mission-critical systems for Unmanned Aerial Vehicles (UAVs) in a Scrum (Agile) environment, with a focus on TDD and clean architecture (SOLID). Worked on the following products: **VCSi** - A ground control system for real-time UAV command and monitoring; **VCS4586** - A legacy UAV control station based on NATO standards; and **Hydra Fusion Tools** - A real-time 3D mapping and photogrammetry tool for geospatial data visualization.
  - **Skills**: C++, Computer Vision, Photogrammetry, Qt4/5, Python, OpenGL, Test Driven Development, Linux, Git, Jenkins, Crucible.

Civil Engineering Experience

- **Civil / Structural Engineer (Various Roles)** — Herold Engineering, Terra HDD, Jacobs Engineering
  Nanaimo, BC / Calgary, AB — *2012 - 2016 (4 years*

  - **Responsibilities**: Worked on a wide range of projects, including industrial facilities, marine structures, bridges, and pipeline crossings. Involved in structural and geotechnical design, inspections, project management, and construction reviews for public buildings, oil and gas facilities, and complex geographies.

- **Projects**: SAGD Oil & Gas Facilities (CNRL Kirby South, Suncor Firebag), BC Ferries Marine Facilities, pipeline crossings under lakes and rivers, bridges, wharfs, and hydroelectric power plants.
- **Skills**: Structural analysis (S-Frame), Geotechnical design, AutoCAD, Revit, Dynamic (earthquake) analysis, offshore pile-driving, concrete, steel, timber design, project management, construction monitoring, safety training, soil classification, borehole analysis.

Coursework - Machine Learning / AI

Deep Learning (Coursera) Andrew Ng Specialization: CNNs, hyperparameter tuning, logistic regression.

MSc Coursework (GaTech) CS7641 Machine Learning; CS6475 Computational Photography; CS6601 Artificial Intelligence; CS7638 AI for Robotics; CS7637 Knowledge-Based AI; CS7646 Machine Learning for Trading.

Research Paper Univ. of Calgary: *Multi-Agent Simulation Framework for Autonomous Vehicles and Intelligent Transportation Networks.*

Computational Mechanics Stuttgart Univ. (Germany): Numerical methods, FEA, thermodynamics, particle dispersion.

Personal & Open-Source Projects

acku.org	Volunteer-built Wordpress site for a karate non-profit; integrated calendar + Google Maps API.
C++ Code Generator	Go + Qt template-based generator, 50k+ downloads, 20+ GitHub stars.
Image Organizer Tool	Python/EXIF photo renamer + resizer for large-scale image sets.
Sudoku Solver	C++ recursive brute-force solver.
Triple Triad Solver	C++ Minimax AI for the FFVIII card game.

Accreditations

- **APEGA** Alberta, Canada
  Professional Engineer (P.Eng) *Feb 2021 - Current*

Languages

- **English**
  Native Tongue
- **German**
  Intermediate (B1 Level)