Aidan Lawford-Wickham

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EDUCATION

University of Toronto — BASc. in Engineering Science — Expected April 2022

Machine Intelligence Major, Certificate in Engineering Business, GPA: 3.4
Activites:
- Built an **autonomous robot** to charge electric vehicles (software and computer vision systems lead)
- Developed a progam to **construct 3D point clouds** for 2D image pairs using stereoscopic vision
- Created a **programmable 4-bit processor** on an FPGA using verilog

Coursework:
Data Structures and Algorithms, Digital & Computer Systems, Calculus, Probability & Stats, Matrix Algebra, Machine Learning, Signal Analysis, Image Understanding, Neural Networks and Deep Learning

Massachusetts Institute of Technology — iD Tech Coding & Engineering Academy — July 2017

- Object-oriented design, Android development in Java
- Published a survival game with **multithreaded performance**, canvas graphics, unique touchscreen joystick controls

EXPERIENCE

Ceridian HCM, Inc. — Software Developer Intern — May 2020 – Present

- Architected key elements of **application-wide** UI framework used in production by over **3.9 million** active users
- Designed a fully-featured data grid to fetch, cache, and modify over **50,000 records** with complete responsiveness
- Spearheaded new React **hooks-based component architecture**, shaping frontend design practices
- Contributed to an agile, scrum-based environment, leading the team as scrum master

MetaBrainz Foundation Inc. — Google Summer of Code, Developer — May 2019 – Aug 2019

- Designed a scalable engine for similarity indexing between **~14 million** audio recordings from scratch
- Improved indexing speed over previous solution by **~400%**, bringing similarity recommendations to production
- Created interactive visualizations for genre classification of high dimensional data with **t-SNE and PCA** algorithms
- Reduced server CPU load by **~50%** after improving database schema and optimizing PostgreSQL queries
- Built **playlist recommendation system** using shortest-path audio feature analysis and **collaborative filtering**

University of Toronto Data Science Team — Data Engineer — Sept 2018 – Mar 2019

- Predicted peak energy demand days across Ontario using historical demand and weather patterns
- Created a pipeline that uses a **recurrent neural network** to model time series weather data with accuracy of **96%**

PROJECTS

Boardwalk — Flexible Information Graph — Mar 2020 – Present

- Co-founder of Boardwalk, a collaborative platform for organizing and sharing information with maximum flexibility
- Designed extensible data models with Typescript that are independent from business logic
- Created a **fast, serverless** React frontend with **real-time collaboration** and persistence through Firestore

F1 Advantage — RL Optimization Software — May 2020 – Present

- Program that optimizes car configuration and favourable accelerations at each point on a Formula One racetrack
- Powered by reinforcement learning, F1A uses a **deep Q-learning model** trained on a **custom-built OpenAI Gym**

SKILLS

Programming Languages — Python 3.x, Typescript, Javascript, C/C++, Java, Bash, ARM Assembly, Verilog, MATLAB
Frameworks/Libraries/Tools — Flask, Express, React, NodeJS, NumPy, TensorFlow, Linux, SQL, Docker, git, Firebase, Azure
Design — Big data systems, backend & databases, machine learning infrastructure, API design, UI Architecture