

Brandon Haw

ARTIFICIAL INTELLIGENCE SOFTWARE ENGINEER

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Experience

Katerra, a Softbank Portfolio Company

Toronto, ON

ARTIFICIAL INTELLIGENCE SOFTWARE ENGINEER

2019 - Present

Applied AI Deployment for Mass Timber

- Led a project to optimize the construction and assembly of mass timber panels (CLT) in North America's largest engineered lumber facility using applied AI methods. *Co-inventor on the resulting patent: Active Lumber Management – 62/902,335*
- Developed AI methods in Python enabling up to \$8 million in annual savings by allowing the facility to use a wider variety of lower grade lumber sources, while simultaneously reducing waste and assembly-line downtime. Solution included a combination of stochastic optimization methods, decision trees and tree search, deep learning, and more. Project coded in Python using scientific and self-made libraries.
- Created proof-of-concept methodologies using limited and disparate data sets to drive strategic intents, selling several projects to the business
- Performed ad-hoc statistical and data analysis to support other manufacturing initiatives using standard Python data science libraries

Collaborated on the following AI initiatives:

- Researched and implemented optimization techniques leveraging the latest GPU technologies to increase the performance of the groups AI code. Performance increases led to reduced run time, allowing the team to iterate and experiment faster
- Computer vision and augmented reality for real-time quality assurance of manufacturing lines: prevent downtime and downstream errors by automatically catching manufacturing defects early using CNNs. Project coded in Python using Tensorflow
- Activity tracking: capture and log worker/manufacturing activities using deep learning and CNNs to be used for resource planning/allocation. Project coded in Python using Tensorflow
- Real-time sensor-fusion for occupancy detection at-edge: created a time-series model capable of predicting the occupancy of a room using only temperature and humidity data using auto regressive models. Model required to run on low-powered edge devices. Project coded in Python using the Python library StatsModels
- Automated control of HVAC systems using streaming sensor data: created a model to control an HVAC system using user-defined comfort settings. Savings of up to 40% in energy usage compared to conventional set-point control. Experiments created using Python, models translated to run on embedded hardware.

Soduh

Toronto, ON

FOUNDER, LEAD DEVELOPER

2017 - 2018

- Founded a startup that used computer vision to create 3D models of customers and clothing and then matched them using AI/deep learning. Goal was to improve fit confidence when shopping online
- Programmed several Deep Learning and Machine Learning models to predict 'fit scores', a novel, more comprehensive way to assess fit. Built the website using Django. Created APIs using Django Rest Framework (DRF). Front end built using React. Mobile apps built in React Native

Siemens Canada

Oakville, ON

INTERNAL SOFTWARE CONSULTANT, ENGINEERING PROJECT SUPPORT

2013 - 2016

- Improved the manufacturing and engineering efficiency of Siemens through the deployment of Siemens owned PLM software as a member of the Product Lifecycle Management team
- Conducted site visits and interviews in various Siemens plants to map all business and engineering processes and their associated IT/software systems
- Created an automated reporting tool to analyze the financial data and generate quarterly reports for over 100 projects in order to quickly and accurately target projects for review
- Created and implemented comprehensive models used by executive management which improved the quality of reporting and enabled more accurate project tracking
- Conducted internal reviews in order to uncover root causes of project issues. Proposed corrective actions to recover costs, resulting in the recovery of over \$600K in costs for one particular project

Education

Georgia Institute of Technology

Atlanta, GA

M.Sc. COMPUTER SCIENCE - MACHINE LEARNING, GRADUATED HONOURS

Class of 2018

Queen's University

Kingston, ON

B.A.Sc - MECHANICAL ENGINEERING, DEAN'S HONOURS LIST, GRADUATED HONOURS

Class of 2012

- Thesis: "Intelligent Monitoring of Assembly Automation using Machine Learning"

Additional

- **Languages/tools:** Python (Tensorflow, Pytorch, SKLearn, more), R, SQL, Postgres, C, C++, git, Javascript, Go, LaTeX
- **Applied Experience in:** Machine Learning/AI, Deep Learning, Reinforcement Learning, Computer Vision, Natural Language Processing, Data Visualization, Anomaly Detection, GPU Programming, Unix