Alexander Lee Tobias

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Education

University of Toronto	**Expected May 2022**
B.S. Computer Science, 3.96/4.0 GPA	*Toronto, ON*

Work Experience

University of Pennsylvania — **May 2021 – Present**
Research Intern — *Remote*
- Worked under Dr. Ryan Baker to apply machine learning for predictive modelling on MOOC datasets.
- Received a fellowship from Schmidt Futures and The Learning Agency Lab to pursue research at the University of Pennsylvania Center for Learning Analytics.

FlyFarm Agritech — **May 2020 – Jul 2020**
Software Engineer — *Hong Kong*
- Designed and deployed proprietary edge device network for live IoT sensor data aggregation & reporting.
- Results included 150% improvement in environmental stability and 100+ hours of operational labor saved.
- Developed network management app in React/Flask/MySQL stack, implemented RESTful API for backend.
- Created computer vision (OpenCV) production tracking tools that increased collection efficiency by 20%.

Bionik Laboratories, Inc. — **Jan 2019 – Apr 2019**
Software Engineering Intern — *Toronto, ON*
- Developed embedded RTOS software for ST Microcontrollers in C in therapeutic-assistive robotic system.
- Increased system graphics cost-efficiency over 50% by analysing and automating rendering tests.
- Implemented systems communications using CAN and I2C protocols, decreased accelerometer latency by 10%.
- Created internal tools to test AMQP protocol, WebRTC and other experimental system features.

Projects

SideWindow (*link to homepage*) (*link to marketplace*) | *TypeScript, React, Socket.io* — **May 2021**
- Created an original Visual Studio Code extension with companion web client application.
- Extension lets users cast editor contents to multiple devices for remote and collaborative editing.
- Built a cross-platform web client for seamless mobile and desktop access.

Tweet Sentiment Predictor (*link*) | *JavaScript, WebAssembly, Python* — **Apr 2021**
- Trained a sentiment analysis model on the 1.6 million tweet Sentiment140 dataset.
- Compiled FastText to WebAssembly to run classifier model in browser, optimized model size from 250MB to 2MB.
- Created web tool using said model to perform sentiment analysis (positive or negative) on supplied text.

Part-of-Speech Tagger | *Python, NumPy* — **Mar 2021**
- Implemented a part-of-speech tagger utilizing Hidden Markov Models & Viterbi Algorithm to estimate likelihood.
- Tagger can be trained on texts to generate a model; can tag seen and unseen texts with up to 90% accuracy.

Jammify: Bringing Artists Together (*link*) | *MongoDB, Express, React, Node* — **Dec 2020**
- Created a social media platform for independent artists to promote themselves and offer collaboration.
- Users can create a profile and match with other artists they want to collaborate with.

Relevant Coursework

- Artificial Intelligence
- Operating Systems
- Algorithm Analysis
- Statistics
- Databases
- Systems Programming
- Programming Languages
- Computer Architecture

Skills & Interests

Languages: Python, C, C++, JavaScript, TypeScript, Haskell, Lisp/Racket, Java
Technologies/Frameworks: Linux, git, React, Flask, Express, MongoDB, PostgreSQL, MySQL, AWS, Elasticsearch
Technical Interests: Artificial Intelligence, Linux Kernel, Functional Programming
Personal Interests: Improv Theatre, Mixology, Mountain Biking