# Alexander Lee Tobias

*US/Canada Dual Citizenship*
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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 – Aug 2021**
*Research Intern* *Remote*

- Received a Schmidt Futures Learning Engineering grant to work with the UPenn Center for Learning Analytics.
- Worked under Dr. Ryan Baker on the MORF framework to perform predictive modelling and replication of results in MOOC datasets.

**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