

# Bill (Yuan Hong) Sun

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## EXPERIENCE

### **PUBLIC HEALTH ONTARIO** | MACHINE LEARNING RESEARCHER

Sep 2020 – Dec 2020 | Toronto, ON

- Applied NLP techniques to develop a sentiment analysis model that detects social media posts containing misinformation on vaccines.
- Currently achieves over 80% test accuracy on 3-class sentiment.
- Developed a dashboard web application in Python and Tableau that scrapes and analyzes new social media posts daily and displays vaccination and COVID-19 misinformation statistics.

### **NURALOGIX** | DATA SCIENCE SOFTWARE DEVELOPER INTERN

May 2019 – Aug 2020 | Toronto, ON

- Worked in an Agile environment; involved in both development and research work with multiple interdisciplinary teams.
- Developed a full-stack web application for testing survey-based machine learning models. Includes a microservice backend (using AWS Lambda), a Flask frontend, and PostgreSQL database.
- Helped build a symptoms-based COVID-19 assessment tool, developed from an ensemble machine learning model.
- Developed an open-source Python API interface to simplify access to the DeepAffex cloud, utilizing REST API, WebSocket, and gRPC. Wrote an open-source program that shows use cases for the API and SDK.
- Developed a Python GUI application using QT, along with a Jenkins pipeline that automated video data processing.
- Developed machine learning models to predict mental health conditions.

### **TRAVEL MODELLING GROUP** | DATA SCIENCE RESEARCHER

May 2017 – Aug 2017 | Univ. of Toronto Transportation Research Institute

- Analyzed datasets of simulated paths from public transit path choice modelling of the Greater Toronto Area.
- Developed fitness functions in Python for path comparison. Improved efficiency by implementing data structures.
- Results were used to improve a machine learning prediction model.

## PROJECTS

### **MUSICGENRE** | CO-DEVELOPER

Sep 2018 – Jan 2019 | University of Toronto

- Multiclass music genre classification utilizing convolutional neural networks (CNNs) and recurrent neural networks (RNNs) from PyTorch.
- Achieves 87% test accuracy in 4-class classification.
- Constructed an audio dataset using the Spotify and YouTube APIs.
- Utilized feature engineering techniques to process raw audio.
- Developed a Flask web demo that samples audio from a YouTube link.

### **UNDERGRADUATE THESIS** | MACHINE LEARNING APPROACHES FOR RAPID ASSESSMENT OF ANXIETY

Sep 2020 – Apr 2021 | Ontario Institute for Studies in Education

- Working with Prof. **Kang Lee**. Aiming to publish by April 2021.
- Applied various machine learning techniques to predict the likelihood of anxiety disorder from a user survey, with over 90% accuracy.
- Includes a web application demo in Python and Flask.

## EDUCATION

### **UNIVERSITY OF TORONTO**

BACHELOR OF APPLIED SCIENCE IN  
ENGINEERING SCIENCE, MAJOR IN  
MACHINE INTELLIGENCE, MINOR IN  
ENGINEERING BUSINESS

Sep. 2016 – May 2021 | Toronto, ON

## SKILLS

### **PROGRAMMING**

Proficient:

Python • HTML/CSS/JavaScript

Familiar:

C/C++ • SQL • R • MATLAB • Java

### **FRAMEWORKS / LIBRARIES**

Numpy/Scipy • Pandas • PyTorch  
TensorFlow • Scikit-learn • XGBoost  
Tableau • Flask • JWT • jQuery

### **OTHER TECHNOLOGIES**

Git/Github • AWS • Linux • Docker  
Atlassian toolkit • Serverless • Jenkins  
Microservices/API • Machine learning  
Deep learning / neural networks • NLP

## COURSEWORK

### **GRADUATE LEVEL**

Natural Language Computing  
Neural Networks and Deep Learning

### **UNDERGRADUATE**

Thesis • Capstone Project  
Artificial Intelligence  
Methods of Data Analysis  
Probabilistic Reasoning  
Engineering Design • Robotics Design  
Economics • Marketing • Management

## EXTRACURRICULAR

Toastmasters Competent Communicator  
Engineers Without Borders  
Institute for Leadership Education in  
Engineering (iLead)  
Blue Sky Solar Car Racing Team

## LINKS

Github:// [billyhsun](#)

LinkedIn:// [bill-yuan-hong-sun](#)

Portfolio:// [billyhsun.github.io](#)