Joseph Mok

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Portfolio Website: <https://hjmok.github.io/josephmok_portfolio>

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# Summary of Qualifications

* Proficiency in utilizing TensorFlow/Keras, PyTorch, Scikit-Learn, OpenCV, NumPy, and Pandas libraries in Python
* Programmed various machine learning models including linear/logistic regression, CNN, RNN, NLP models, etc.
* Well versed in data preprocessing and feature engineering in preparation of machine learning model training
* Experienced with SCADA and PLC software packages, including Allen Bradley and Ignition Automation Software
* Experienced integrating MySQL, Python scripting, and Ignition for capturing SCADA trend data and data analysis
* Strong cross-functional project management experience from leading various multidisciplinary projects

# Professional Experience

Yaya Foods Corp. *Toronto, ON*

**Senior Automation Engineer***,*July 2019 – Present

* Lead the automation design for several SCADA systems for beverage manufacturing clients by integrating Rockwell Automation PLCs/HMIs, Ignition Automation Software, MySQL, and ethernet IP networks
* Developed data mining process by storing transmitter data from PLCs to MySQL database using Ignition SCADA packages. Developed client applications within Ignition for data analysis (heavy Python scripting)
* Gained strong troubleshooting skills for hardware and software to determine root cause of production halts
* Sourced transmitters, motors, VFDs, valves, and necessary hardware for new automation systems

Apple Inc. *Cupertino, CA*

**Recycling R&D Engineer Intern***,*September 2018 – April 2019

* Managed development of recycling systems for Apple products. Involved heavy coordination with vendors and internal Product Design teams to organize documentation and deadlines
* Developed optimal cycle time processes for de-manufacturing of various Apple products. Resulted in a 90% increase in the Unit-per-Hour output compared to the current manual methods
* Designed semi-autonomous prototypes to showcase cycle time and disassembly improvements. Designs continuously integrated feedback to improve operator ergonomics and meet California waste regulations

# Projects

The following are sample projects. To see all projects, please visit: [*https://hjmok.github.io/josephmok\_portfolio*](https://hjmok.github.io/josephmok_portfolio)

**Breast Cancer Malignant or Benign Diagnosis** [*https://hjmok.github.io/josephmok\_portfolio/#/BC*](https://hjmok.github.io/josephmok_portfolio/#/BC)

* Applied Logistic Regression and K-Nearest Neighbour models to a Breast cancer classification dataset with 32 columns of patient data, including a label which determine if the cancer cells were malignant or benign
* Used Scikit-Learn’s LogisticRegression and KNeighborsClassifier classes
* Logistic Regression model achieved 98% accuracy and K-Nearest Neighbour achieved 97% accuracy

**TFIDF Text Classification** [*https://hjmok.github.io/josephmok\_portfolio/#/TFE*](https://hjmok.github.io/josephmok_portfolio/#/TFE)

* Created a supervised learning model to classify Positive/Negative reviews in an Amazon Reviews dataset and Ham/Spam text messages in an SMS dataset. Data-preprocessing involved removing null rows
* Utilized Scikit-Learn’s TfidfVectorizer to Count Vectorize each unique word in the training set, then applied Term Frequency-Inverse Document Frequency feature extraction to said words. Then used Scikit-Learn’s LinearSVC (Support Vector Classifier) to return the best fit hyperplane to categorize the data.
* Achieved a 98% accuracy on the SMS dataset and 86% accuracy on the Amazon Reviews Dataset

**Stock Prices Prediction** [*https://hjmok.github.io/josephmok\_portfolio/#/StockPriceRNN*](https://hjmok.github.io/josephmok_portfolio/#/StockPriceRNN)

* Created an RNN model on Tensorflow to predict AMD and Google Stock prices by training on daily stock price data from May 2009 to August 2018
* Model utilized 4 LSTM layers and test on a quarterly sequence size and annual sequence size
* Resulting models were able to follow the general trend and scale of the stock prices

**Taxi Fare Prediction ANN**  *https://hjmok.github.io/josephmok\_portfolio/#/Taxi*

* Created ANN Regression and Classification models with PyTorch to predict a taxi fare amount and class
* Performed feature engineering and separated continuous/categorical columns from the data set. Utilized dropout layers and batch normalization to reduce overfitting
* Regression model achieved a MSE of $3.88 (prediction is off by this much on average) and Classification model achieved cross entropy loss of 0.272 (misclassified 27% of the time)

**User Movie Rating Prediction with AutoEncoders** [*https://hjmok.github.io/josephmok\_portfolio/#/AE*](https://hjmok.github.io/josephmok_portfolio/#/AE)

* Created a Stacked AutoEncoder model to predict what rating a user will give to a film. Model used 3 hidden layers with 32, 16, and 32 nodes for the first, second, and third hidden layers respectively.
* Trained on a Grouplens dataset with 1 million rows of move ratings from 6040 users across 3952 rows
* Achieved a train loss of 0.808 and test loss of 0.896, meaning every prediction is off by ±1 star

# Education

University of Waterloo,

**Bachelor of Applied Science, Honours Mechanical Engineering,** Graduated June 2019