

Joseph Mok

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

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GitHub: <https://github.com/hjmok>

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
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Professional Experience

Yaya Foods Corp.

Toronto, ON

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
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Projects

The following are sample projects. To see all projects, please visit:

https://hjmok.github.io/josephmok_portfolio

Breast Cancer Malignant or Benign Diagnosis

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

- 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

- 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

- 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 movie 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