Luchao Qi

Entry-level data scientist

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EDUCATION

The Johns Hopkins University May 2020
M.Sc.Eng. Biomedical Engineering

Northeastern University Aug 2018
B.S. Biomedical Engineering

SKILLS

Programming/Frameworks: Python, R, SQL, Shell Scripting, AWS
Packages: NumPy, Pandas, Scikit-Learn, NLTK, dplyr, tidyverse, Keras
Machine Learning: GLM, Random Forest, SVM, KNN, K-Means, PCA
Data Visualization: Tableau, Matplotlib, Seaborn, ggplot2, plotly
Data Science: A/B testing, NLP, Hadoop, Spark, HDFS

WORKING EXPERIENCE

Research Data Scientist, The Johns Hopkins Data Science Lab Baltimore, MD | Sep 2019 - Present
Association analysis between lifestyle patterns and body mass index (BMI) via generalized linear model

- Wrangle time-series data of 32971 subjects and build pipeline to front-end dashboard using **SQL**
- Explore user distribution on **Hadoop** using **MapReduce** to maximize the dataset's value
- Transform features using **normalization** to enhance machine learning pipelines
- Train a generalized linear model (**GLM**) to predict user BMI with 46.07 mean squared error (**MSE**)
- Reduce prediction error by 13% using feature selection method (**hypothesis testing, Random Forest**)
- Identify statistically significant (p-value < 0.5) impact of lifestyle patterns on BMI to encourage the performance of multiple good health behaviors

Data Analyst Intern, The Johns Hopkins Bloomberg School of Public Health Baltimore, MD | May 2019 – Aug 2019
Survival analysis in time-series data using Python, R

- Cleaned National Health and Nutrition Examination Survey (NHANES) data using **dplyr**, **tidyverse**
- Reduced dimensionality of data using **PCA** to capture essence of the data
- Selected features using **tree-based model**, **AIC/BIC** to achieve better predictive performance of model
- Constructed a neural network on 3000 patients using **Keras** to predict patient mortality with 71% accuracy
- Improved classification accuracy to 86.45% using **regularized logistic regression** for the purpose of benchmarking and performance evaluation of daily activities
- Hosted R shiny website comparing **PCA**, **k-means**, **UMAP**, **t-SNE** and visualizing clustering results using **ggplot2**, **plotly** (demo: https://luchaoqi.github.io/Shiny_clustering/#1)

Senior Researcher, Paul C. Lauterbur Lab at SIAT Shenzhen, CN | Nov 2016 - Jan 2017
EMG signal pattern recognition for hand gestures using spectral analysis

- Designed, constructed and assembled EMG data acquisition system for arm activities recognition
- Converted time-domain data of 200 gestures into frequency domain using **fast fourier transform** to denoise signal
- Classified different hand movements using support vector machines (**SVMs**) with 82% accuracy
- Improved accuracy by 3% training a **neural network** providing insight for medical rehabilitation system

DATA SCIENCE PROJECTS

Amazon product review rating prediction June 2019 – Aug 2019
Detection of suspicious or fake Amazon product reviews using machine learning in Python

- Extracted Amazon Food Reviews data from Kaggle and cleaned data using **pandas**, **numpy** and **dfply**
- Tokenized unstructured text of user reviews using **scikit-learn** and **nltk** for feature construction
- Predicted customer rating categories using **logistic regression** with 0.94 AUC
- Reduced prediction error by 3% using **random forest** to better detect suspicious or fake online reviews

Investigation of Yelp user funnels, Key Performance Indicators (KPIs) Nov 2018 - Jan 2019
Performance analysis of Yelp users & restaurant using SQL

- Wrote **web crawler** to scrape and parse unstructured data from Yelp using **Xpaths**, **BeautifulSoup** in Python
- Created a database using **MySQL workbench** and imported ~10 GB data file into the database
- Visualized geographic distribution of restaurants with average ratings using **Tableau**
- Performed metrics analysis (**bracket retention, DAU/MAU**) using SQL to measure customer engagement and making suggestions for ways to improve upon KPIs via **A/B testing**