

Bingfan Liu

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SUMMARY OF QUALIFICATION

- 4-year experience using R, Python for data analysis.
- 1-year experience using SQL for data query and manipulation in RDBMS.
- Machine learning experience using Keras, PyTorch, Scikit-learn, Numpy, Matplotlib, Pandas and Google Colab.
- Computer vision experience using Scikit-image, ChainerCV, Torchvision, PIL.
- Strong statistics background in statistical modeling, quality control and hypothesis testing.

EXPERIENCE

Machine Learning Researcher in Functional Brain Signal Data Analysis <i>University of Waterloo</i>	Jan. 2020 - Aug. 2020
• Constructed a novel functional machine learning model for allocating disease related brain area using fMRI.	
• Implemented a fast convex optimization algorithm for high dimensional coefficients and projection directions estimation.	
• Conducted extensive independent research including literature reviews, methodology discussions and presentations.	
Teaching Assistant in Statistics <i>University of Waterloo</i>	Sep. 2019 - Aug. 2020
• Tutored over 700 undergraduate students' probability and statistics theories and graded their homework and exams.	
• Assisted over 200 students' hypothesis testing, regression analysis and algorithm implementation with R.	
Data Scientist Intern <i>UNDP</i>	Jun. 2019 - Dec. 2019
• Achieved 83% accuracy in forecasting the sever rain fall using PCA, random forest and regression analysis.	
• Participated in research of poverty prediction for African countries using CNN and satellite night light image data.	
Research Assistant in Law Economics <i>University of Waterloo</i>	Jan. 2017 – Apr. 2017
• Improved the speed of data collection by 400% for Canadian legislative activities by designing Python algorithms.	
• Extensive investigation and resource checking for legal publications.	

EDUCATION

University of Waterloo	
• Master of Mathematics, Statistics / GPA: 88/100 (3.89/4)	Sep. 2019 - Aug. 2020
• Bachelor of Arts, Honors Economics Joint Honors Mathematics / GPA: 90/100 (3.88/4)	Sep. 2016 - Apr. 2019
• Relevant Courses: Computer Vision, Machine Learning, Bayesian Statistics, A/B testing, Time Series, GLM.	
• Publication: “A General FSVM for functional classification.” (to be finished in August).	

PROJECT

Machine Learning: Life Satisfaction Prediction, Kaggle Competition	Feb. 2020 - Apr. 2020
• Achieved 88.3% AUC scores in predicting satisfaction level by blending KNN, Naïve Bayes, random forest, GLM, SVM, GBM using Scikit-learn and implementing deep neural network using Keras.	
R Package: fdp, Functional Data Preprocessing Package	Jan. 2020 - Apr. 2020
• Developed a functional data processing package including tools for data smoothing and dimension reduction.	
• Conducted massive unit tests and data simulations for testing package stability.	
Computer Vision: Deep Image Prior, Semantic Segmentation, Semi-Supervised Segmentation	Dec. 2019 - Apr. 2020
• Detected and analyzed prior information of DNN and its applications in denoising, inpainting and super-resolution.	
• Performed supervised Semantic Segmentation by constructing a self-designed neural net using PyTorch.	
• Implemented a Microsoft adopted semi-supervised Segmentation algorithm using graph cut and clustering.	
A/B Testing: Quality Control	Apr. 2018 - Aug. 2018
• Constructed RBD, Factorial Design and ANOVA for multi-factor process improvement on simulated complex dataset.	
GLM (Generalized Linear Model): Diseases Modelling	Apr. 2018 - Aug. 2018
• Modeled over-dispersed data using mixed model methods for lung function deterioration in a Cystic Fibrosis study.	

AWARD

Winner of The American Statistical Association DataFest 2019

- Led a team of 4 predicting and visualizing athlete fatigue level using times series and random forest.

Winner of The American Statistical Association DataFest 2018

- Led a team of 5 analyzing the demand and supply structure of the labor market in the next 5 years.