WEIQUAN LUO

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PROFILE

4+ years of professional experience that applies advanced statistical analysis and machine learning on mass quantities of data to develop hypotheses and insight. Self-starter with an excellent sense of probability and out-of-the-box thinking.

TECHNICAL SKILLS

Machine learning:
Classification, Data Mining, Dimensional reduction
Statistics:
A/B Testing, Regression, Probabilistic Graphical Model
Data Analysis: ETL, Data visualization, Optimization

Software:
Python (scikit-learn, Keras, Tensorflow, EDA)
R (caret, tidyverse, ggplot2, Shiny)
MySQL, Tableau, Excel, Git.
Certificate: Tableau Specialist Certificate

EDUCATION

M.S. with Thesis at Iowa State University Ames, IA
Major: Agricultural and Biosystems Engineering, Minor: Statistics (GPA: 3.65/4.00) Jan 2018 - Dec 2020
B.S. at Iowa State University Ames, IA
Major: Biological Systems Engineering (GPA: 3.66/4.00) Aug 2013 - Dec 2017

PROFESSIONAL EXPERIENCE

Researcher in Project "Multiscale Analysis Framework for Water-Energy-Food Nexus" Jun 2018 - Dec 2020
Department of Agricultural and Biosystems Engineering, Iowa State University

- Designed a multiscale analysis framework consisting of **Markov random field** and network analysis to characterize the interlinkages among WEF resource systems.
- Collected gigabytes of spatiotemporal data from multiple sources with APIs and web scrapping.
- Homogenized data to multiscale efficiently by modularizing ETL with object-oriented programming on multi-core.
- Cooperated with principal investigators to educate the larger research group on the effect of the study scale.

Research Assistant in Project "Meta-analysis on Swine Manure and Fertilizer" Aug 2017 to Jun 2018
National Laboratory for Agriculture and the Environment, US Agricultural Research Service, Ames, IA

- Collected direct evidences from controlled experiments by extracting 200+ datapoint from 39 journal articles.
- Assessed the strength of evidence by synthesizing individual studies using **random effects model** of Meta-analysis.
- Evaluated the effects over six moderating variables by visualizing the forest plots.

Research Assistant in Project "Success Strategies for At-Risk Students" Aug 2017 – Dec 2017
Department of Agricultural and Biosystems Engineering, Iowa State University

- Merged tables between pre-enrollment data and first-year students' performance data with VLOOKUP in excel.
- Discovered the relationship between performance and behaviors with one-way **ANOVA** on ranks.
- Quantified importance of the behavioral factors distinguishing students' performance with **random forest** model.
- Protected participant privacy by implementing procedures from human subject research training.

Teaching Assistant for the Course "Applied Numerical Methods" Aug – Dec 2016, 2017, 2018
Department of Agricultural and Biosystems Engineering, Iowa State University

- Evaluated and gave feedback to students on their work on **optimization** and **differential equations**.
- Maintained teaching quality with weekly updates regarding students' learning status.

PROJECT

Kaggle Competition: "Cornell Birdcall Identification" Dec 2020

- Classified 25-Gigabit birdcall audios into 265 bird species using squeeze-and-excitation **residual neural network** on the Mel-Frequency Cepstral Coefficients (F1-score = 0.7534)

Course Project: "Analysis of the EIO Life Cycle Assessment" Dec 2019

- Interpreted the effects of variables on 20 environmental impacts using elasticity estimated by loglog **regressions**.
- Suggested sustainable development for the outlier Industries identified by **DBSCAN** clustering.

Kaggle Competition: "Santander Customer Transaction Prediction" Oct 2019

- Identified the customers with a specific transaction using feature engineering and a **multilayer perceptron** model.

Portfolio Website: weiquanluo.github.io Since Jan 2019

- Posted study notes, projects, and blogs to the open source communities, receiving 1.9k views.