

# 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

**Graduate Research Assistant** for M.S. Thesis “Multiscale Analysis Framework for WEF 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 Water-Energy-Food resource systems.
- Collected gigabytes of spatiotemporal data from multiple sources with APIs and web scraping.
- Homogenized data to multiscale efficiently by modularizing ETL with object-oriented programming on multi-core.
- Cooperated with principal investigators to provide consultations for the larger group on the effect of the study scale.

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

- Collected direct evidence 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.

**Undergraduate 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 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.

**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](https://weiquanluo.github.io) Jan 2019 - Present

- Managed projects, study note and blogs with Git, receiving 1.9k views monitored by Google Analytic.