

Shuai Wang | Curriculum Vitae

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Education

Wright State University

Ph.D. in Engineering Program, Industrial and Human System

Dayton, Ohio

2011–2017

Dalian Jiaotong University

Bachelor of Management, Logistics Management

Dalian, China

2007–2011

Computer skills

Language: Python, R, SQL

Optimization: AIMMS, Pyomo, Minizinc, JuMP, OPL; Cplex, Gurobi, CBC; Heruristic

Machine Learning: AutoML: Datarobot, H2O, pycaret; Time Series: anomaly detection, forecast

Visualization: Shiny, Looker, Superset, Tableau

Database: Redshift, Clickhouse, Snowflake, Postgres

Cloud: AWS Lambda, Sagemaker, Spark, Airflow, API Gateway, EC2

Experience

THOMASNET

New York, NY/Remote

Principal Data Scientist

2021.4–Current

Reporting to head of data and AI. Managing 2 data scientists, 3 data engineers. I started several 0 to 1 data initiative at Thomasnet including:

○ **Internal facing:**

1. Applying AutoML to predict customer churn and sales using AWS suite.
2. Recommending products portfolio to advertisers to maximize ROI using integer programming optimization.
3. Building the first in-house data analytic Python library.
4. Building machine learning algorithm for website bot detection.
5. Creating data cleaning, normalization python library for all the enterprise data cleaning.
6. Introducing new tools like Superset, Datahub, and Amundsen to the enterprise for better data governance and visualization.

○ **External facing:**

1. Creating time series anomaly detection (signals) of sourcing activities for hedge funds.
2. Creating sourcing trend and stock price/revenue correlation for hedge funds.
3. Working on TMX index to track supply chain status in the USA. TMX is used by researchers from Carnegie Mellon University for Congressional hearing on supply chain, and University of Hong Kong for COVID19 related studies.
4. Creating APIs and charts for the Thomasnet's alternative data platform for institutional investors.

84.51/KROGER

Cincinnati, OH

Lead Data Scientist and Operations Research Scientist

2017.9–2021.4

Transferred with Kroger's R&D team, to Kroger's subsidiary data analytical company 84.51 in February 2018.

- **Order Forecast and Picking Staff Daily Scheduling System Optimization:** The daily staff scheduling system is built to optimize the number of staff required to picking orders at each hour. Time-series based machine learning model is implemented to predict the orders. An optimization model using CBC/Cplex solver is created to minimize labor cost. The project saves about 20 to 30% labor cost (\$200 to \$300 million) than the previous implementation. This is escalated as one of top priority

project responding to COVID19 at Kroger.

- o **In-store Inventory Control and Restock Optimization:** The project is to transform the in-store inventory into scientific based management system, to increase productivity. 1. I build the inventory replenishment routing model, to reduce travel distance heuristics, based on traveling salesman problem. A novel distance metric was proposed to match the store layout. 2. A comprehensive staff productivity graph was created to track the scanning activity, idle time, travel time. 3. Heuristic-based restock strategy was created to alert the restock point based on BOH.

LARGE SCALE OPTIMIZATION LAB FROM WSU PARTNER WITH KROGER

Cincinnati, OH

Senior Operations Research Consultant at Kroger

2012–2017

- o **Promotion Planning Optimization:** A MILP optimization model(Collaborative Category Optimization) was jointly developed with A.T. KEARNEY using AIMMS to build promotion planning and assortment selection to maximize the overall revenue gain. The system is implemented in 2014 and saves about 3 to 5%(\$2 to 5 billions) of the total purchasing cost annually.
- o **Forecast and Optimization for clinics:** The problem is to accurately forecast the number of patients by type to each clinic. Sophisticated forecast models that utilize inputs from time, weather, social media data like Google trend queries are used to predict the number of visits. These forecasts serve as input to calculate the inventory necessary for each type of sickness, and the allocation of medical personnel and their shifts. The overall goal is to improve customer service and increase the number of clinics from 136 to 500 in three to five years.
- o **High Value Product Local Inventory Transfer:** The problem is to ship medical drugs from stores with excess to stores with needs so as to: 1) reduce potential obsolesces in inventory; 2) better position drugs to meet customer demand; 3) to aggregate the shipment in such that transportation costs are reduced. The model is piloted in 121 stores and is expected to produce \$30 to \$50 million savings as well as reduction in out-of-stock.

WRIGHT STATE UNIVERSITY, ACADEMIC

Dayton, OH

Graduate Research and Teaching Assistant

2011–2017

- o **PhD Dissertation: Data mining techniques and mathematical models for the optimal scholarship allocation problem for a state university**
The research uses classification algorithms to find matriculation and graduation rate by varying scholarships. Then the optimization model was developed to optimize revenue under budget, and fairness constraints. This research has prompted the university wide scholarship redesign, the APS calculator, see Website. This project has resulted a 11% (2014), 13.9% (2015) increase in direct admit students, which translates into a 5 to 10 million dollars of revenue increase for WSU annually.
- o **Teaching Assistant** 1. Intro of Data Mining and Applications. 2. Intro of Operations Research Models.
- o **Advisors:**
 1. Xinhui Zhang: Head of supply chain and operations research at Alibaba. Three times INFORMS Franz Edelman Award finalist.
 2. Pratik Parikh: Chair of Dept of Industrial Engineering, University of Louisville
 3. Nan Kong: Purdue University

UNIVERSITY OF TEXAS, AUSTIN, ACADEMIC

Online

Adjunct Professor

2021.9–2022.4

Teaching Introduction of Artificial Intelligence and Machine Learning at McCombs School of Business.

PRO BONO

Operations Research / Data Science Consultant

- o **NYC Dog Care Stores Weekly Staff Scheduling Optimization:** I helped a dog care store with 4 locations to create a weekly staff scheduling system with various constraints such as: staff schedule preference, locations preference, demand coverage, and cross-skills satisfaction.
- o **Cincinnati Public School Bus Routing Optimization:** I wrote the core optimization algorithm using meta-heuristics, Julia with CBC/Gurobi solver. The result is comparable to the MIT's solution for the Boston public school system.