Shuai Wang | Curriculum Vitae

Data Scientist/Operations Research Scientist

I build end-to-end data product.

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Education

Wright State University   **Dayton, Ohio**

Ph.D. in Engineering Program, Industrial and Human System   2011–2017

Dalian Jiaotong University   **Dalian, China**

Bachelor of Management, Logistics Management   2007–2011

Computer skills

Language: Python, R, Julia, SQL.   **OS**: Linux; Neovim, Spacemacs, zsh, tmux.
Cloud: AWS Lambda, Sagemaker, Spark, Airflow, API Gateway, EC2.
Machine Learning: Datarobot, H2O, sklearn, tensorflow, AutoML, pycaret.
Math Optimization: AIMMS, Pyomo, Minizinc, JuMP.   **Solver**: CPLEX, GUROBI, CBC.
Database: Clickhouse, Redshift, Athena, Mysql. **Visualization:** Superset, Shiny, Tableau.

Experience

Thomasnet.com   **Remote/NYC**

Lead 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 using AWS suite.
2. Recommending products portfolio to advertisers to maximize ROI using integer programming optimization.
3. Brining Superset, Datahub, and Amundsen to the company for better data governance and visualization.
4. Building the first in-house data analytic python library.

External facing:

1. Created time series anomaly detection of sourcing activities for hedge funds.
2. Created sourcing trend and correlation of stock price/revenue for hedge funds and Bloomberg.
3. Working on TMX index to track supplier 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 covid related study.

Global Associates Consulting   Cincinnati, OH
Lead Data Science Consultant at Kroger/84.51   2017.9–2021.4
Order-picking Staff Daily Scheduling System Optimization:

The staff scheduling system is built to optimize the number of staff required to picking orders at each hour. Time-series based forecasting model was used to predict the orders. The project saved about 20% to 30% labor cost (~$200 million) compared to the previous implementation. This was escalated as one of top priority at Kroger to respond to COVID19.

Inventory Control: 1. I built the inventory replenishment routing model based on traveling salesman problem. 2. A comprehensive staff activity graph was created to track the activity and idle time. 3. Heuristic-based restock strategy was created to alert the restock point based on BOH.

Kroger, *partner with Large Scaled Optimization lab@WSU*
Operations Research Consultant at Kroger   2012–2017
Simulation and Optimization for Pharmacy Inventory Management

From media: "The Kroger Co. aspired to improve the inventory at the company's more than 1,950 pharmacy locations. A transparent simulation and optimization model is designed for pharmacy inventory management. The system enabled the company to reduce out-of-stocks by 1.5 million prescriptions, lowered inventory by more than $100million, and yielded additional revenue of more than $70 million since Oct 2011."

This project is awarded 2013 Franz Edelman Finalist for Achievement in Operations Research and Management Science–the Superbowl competition of optimization and machine learning. I am core member for simulation and optimization algorithm design and lead the follow-up implementation of other categories.

Forecast and Optimization for Clinics:
The problem is to accurately forecast the number of patients by visiting reason at each clinic, then to optimize the nurse shifts, and pharmacy inventory. Sophisticated forecast models that utilize inputs from time, weather, social media data like Google trend queries were 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. A nurse scheduling system is also developed to minimize costs.

Promotion Planning Optimization: A MILP optimization model was jointly developed with *A.T.Kearney* using AIMMS to build quarterly promotion plan and assortment selection to maximize the overall revenue gain. The system is implemented in 2014 and saved about 3% (~$2.5 billion) of the total products purchasing cost annually.

Wright State University   **Dayton, OH**
Graduate Research and Teaching Assistant   **2011–2017**
PhD Dissertation: *Data mining techniques and mathematical models for the optimal scholarship allocation problem for a state university.*
Enrollment revenue increased about $5 million per year from year 2014 to 2017.

Main Advisors:
Xinhui Zhang (Head of supply chain and operations research at Alibaba),
Pratik Parikh (Chair of Dept of Industrial Engineering, University of Louisville),
Nan Kong (Purdue University).

Teaching Assistant: 1. Intro of Machine Learning Models. 2. Intro of Deterministic Operations Research Models.

Pro Bono

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.

Cincinnati Public School Bus Routing Optimization: I wrote the core optimization algorithm. The result is comparable to MIT's solution for the Boston public schools.