

# Hongzhang Shao

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## CONTACT

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## RESEARCH

I work with data and mathematical models. My work seeks to introduce models that loosen existing restrictions, capture more aspects of real world practices, and are still interpretable and computationally tractable. A major tool in my research is **conic programming**.

Over the past few years, I’ve been studying **revenue management** problems in retailing (pricing, assortment planning, demand forecasting, etc.). Now I’m getting started on similar problems, but with application in **transportation systems**.

## EDUCATION

**Georgia Institute of Technology**, Atlanta, USA

Ph.D. in Operations Research (expected) June 2022

– Advisor: Anton Kleywegt

– Committee: Huseyin Topaloglu, Zizhuo Wang, He Wang, Arkardi Nemirovski

M.S. in Operations Research

December 2015

**Zhejiang University**, Hangzhou, China

B.E. in Automation & Engineering

July 2014

– Advisor: Guang Li

Morningside Scholar in China Studies

## PUBLICATIONS

### In Preparation

– Kleywegt, A. J., Li, Y. & Shao, H., *A Markov Decision Process Model of Drivers’ Relocating Behavior in Ride-sharing Markets*.

– Kleywegt, A. J. & Shao, H., *Pick-up Time Dynamic and Pricing in Ride-sharing Systems*.

– slides and presentation recording can be provided

### Preprints

– Kleywegt, A. J. & Shao, H., *Joint Price and Assortment Optimization under Discrete Choice Models: A Conic Programming Framework*.

– a draft can be provided and will be put on arXiv.org soon

– Kleywegt, A. J. & Shao, H., (2020). *Tractable Profit Maximization over Multiple Attributes under Discrete Choice Models*. ArXiv:2007.09193.

– slides and presentation recordings can be provided

– a new draft will be updated to arXiv.org soon

– Kleywegt, A. J. & Shao, H., (2020). *Joint Estimation of Discrete Choice Model and Arrival Rate with Unobserved Stock-out Events*. ArXiv:2003.02313.

## EXPERIENCE

### **Cardinal (Shanshu) Operations LLC**, Shanghai, China

*Operations Research Intern*

Summer 2019

- Led a revenue management (product pricing) project for a leading beer manufacturer.
- Built multi-SKU (nested logit) choice models to analyze consumer behavior in major cities.
- Implemented joint price optimization over SKUs, channels & cities.

### **WestRock Company**, Atlanta, USA

*Operations Research Intern*

Summer 2017

- Implemented a spare parts inventory control model & a 3D bin packing optimization model.
- Developed demo webapps for both projects. Dynamic data visualizations included.
- The demo webapps and presentations were well accepted by clients and company leaders.

### **Gimme Vending LLC**, Atlanta, USA

*Data Scientist Consultant*

February 2016 - March 2017

- Developed product assortment planning algorithms based on discrete choice models.
- Implemented the algorithms on AWS (Linux server) with PostgreSQL, R & RStudio Server.
- Conducted 2 field tests on 10 machines; Both resulted in > 10% improvements on sales.
- Developed & deployed an assortment planning web application with RMarkdown & Shiny.

## TEACHING

### **Instructor:**

- ISyE 3133 Engineering Optimization (Studio)

Spring 2021

### **Teaching Assistant:**

- ISyE 6383 Supply Chain Operations
- ISyE 6414 Regression Analysis
- ISyE 6402 Time Series Analysis
- ISyE 6501 Analytics Modeling
- ISyE 4803 Warehousing Systems
- ISyE 3104 Supply Chain & Warehousing Models

Fall 2018, Fall 2019, Fall 2020, Fall 2021

Summer 2020, Summer 2021

Spring 2020

Spring 2019

Spring 2018

Fall 2017

## TOOLBOX

**Data Science:** Python, R, SQL, Amazon Web Services, Google Cloud Platform

**Optimization:** CVX, Gurobi, Mosek, PyTorch

**Documentation:** Markdown, LaTeX, Jekyll, Hugo, HTML, CSS

## INTERESTS

### **Quantitative Trader**

### **Serious Amateur Magician**

- Former President, Magicians Association of Zhejiang University
- Former Board Member, College Magic Union of Zhejiang Province, China

### **Intensive Reader on History, Sociology & Psychology topics**