

# Lingjun Meng

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## Education

<b>Imperial College London (Business School)</b>	Sep. 2023 – Now
PhD in Operations Research (Fully funded by the <a href="#">Business School GTA Scholarship</a> )	
Advisors: <a href="#">Prof. Wolfram Wiesemann</a> , <a href="#">Prof. Ryan Cory-Wright</a>	
<b>Swiss Federal Institute of Technology in Lausanne (EPFL)</b>	Sep. 2021 – Aug. 2023
M. S. in Control Theory	GPA: 5.51/6.0 (equivalent to UK distinction)
Award: <a href="#">EPFL Excellence Fellowship</a>	
<b>Xi'an Jiaotong University (XJTU)</b>	Sep. 2016 – June 2020
B. E. in Energy Engineering	GPA: 92.65/100 (Ranking: 2/18)
<b>University of Minnesota (UMN)</b>	June 2018 – Aug. 2018
Summer Exchange	GPA: 3.89/4.0

## Research Interest

**Methodologies:** Machine learning, robust optimization, optimal transport, statistical learning, signal processing

**Topics:** Data-driven decision making under uncertainty, revenue management, production and operations management

## Working Paper

L. Meng, R. Cory-Wright, and W. Wiesemann (2024). A Scalable Approximation Algorithm for Distributionally Robust Optimization.

## Publication

L. Meng, J. Coldenhoff, P. Kendrick, T. Stojkovic, A. Harper, K. Ratmanski, M. Cernak. (2023). On real-time multi-stage speech enhancement systems". *ICASSP 2024* [[paper](#)] [[website](#)]

## Teaching

Math and Statistics Foundation for Analytics (MSc Business Analytics)	Imperial College London
Teaching Assistant	2024 Fall

## Industrial Internship

<b>Two-stage learning for real-time speech signal separation and enhancement</b>	Feb. 2023 – Aug. 2023
Research Intern, Full-time, Advisor: <i>Dr. Milos Cernak</i>	
CTO office, Logitech Europe S.A., Switzerland	
➤ Enhance the speech quality corrupted by additive noise and nonlinear distortions based on two-stage learning.	
➤ Propose a lightweight two-stage network which consists of a Mel-scale magnitude masking model in the first stage and a complex spectrum mapping model in the second stage. The proposed two-stage network with optimal training scheme could achieve a similar performance to a four-times larger open-source model.	

## Patent & Copyright

- [1] Performance analysis and design software for geothermal heat exchanger. Software Copyright. License: 2020SR0337174
- [2] A Design Method of Non-disturbing Geothermal Heat Exchanger Considering Heat Exchange, Resistance and Economic Factors. Patent.

## Skills

**Theory:** Optimization theory, applied probability, stochastic process, dynamic programming, numerical algorithms

**Practical:** Python, Julia, Matlab, C++, HPC, Tensorflow, Pytorch, Optimization Solvers, Machine Learning Packages

## Research Project

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### **Efficient approximation scheme for optimal-transport distributionally robust optimization** Sep. 2023 – Now

Research Assistant, Advisor: *Prof. Wolfram Wiesemann, Prof. Ryan Cory-Wright*

Imperial College Business School, United Kingdom

- Design an efficient and tractable approximation scheme for optimal-transport DRO problems that leverages only two extreme solutions, the solution of nominal stochastic problem and high ambiguity problem.
- Provide a rigorous error bound for the approximation scheme and study the approach under various practical applications including portfolio selection, facility location and energy system operation.

### **Online bandit algorithms based on distributionally robust optimization** Feb. 2022 – Oct. 2022

Research Assistant, Advisor: *Prof. Daniel Kuhn*

Risk Analytics and Optimization Chair, EPFL, Switzerland

- Develop bandit algorithms based on DRO for online decision-making under uncertainty. Reformulate the distributionally robust bandit algorithms to tractable convex program.
- Derive non-asymptotic regret upper bounds for the policies based on concentration theorems and mathematical analysis techniques, which give a theoretical convergence guarantee for the developed DRO bandit algorithms.

### **Bayesian active learning for robot learning** July 2022 – Oct. 2022

Summer Research Intern, Contract, Advisor: *Prof. Aude Billard*

Learning Algorithms and Systems Laboratory, EPFL, Switzerland

- Learn a safety value function for robots from online user demonstrations using Gaussian process regression.
- Tackle the concept drift challenge through adaptive learning and uncertainty sampling, which significantly reduces the sample collection cost demonstrated through synthetic experiments.

### **Understanding test-time adaptation through synthetic simulation** Sep. 2021 – Jan. 2022

Research Assistant, Advisor: *Prof. Alexandre Alahi*

Lab of Visual Intelligence for Transportation, EPFL, Switzerland [[Project Repo](#)]

- Implement several test-time adaptation methods (TTT, TTT++, TENT, SHOT) for improving the machine learning robustness to distribution shifts.
- Design synthetic experiments to control the domain shifts. Compare and analyze the mechanism of different methods under various domain shifts.

### **Simulation platform development for geothermal systems** Nov. 2020 – June 2021

Research Assistant, Advisor: *Prof. Yaling He*

Lab of Energy Conversion and Storage, XJTU, China

- Propose a method that can predict the comprehensive performance of geothermal heat exchanger and thermal storage systems considering heat transfer, flow resistance, and economical cost.
- Develop a software platform to simulate the performance of geothermal systems.