Yingze Hou

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RESEARCH INTEREST

I am interested in robust optimization, change-point detection, and machine learning to address emerging challenges in public health, system design, and general artificial intelligence, enabling effective and timely decision-making in stochastic environments. My research explores a framework for *surrogate processes*, *causal inference*, and *network optimization* to enhance interpretability and informativeness in detection, supporting adaptive decision-making. I hope to leverage my education in economics and finance to identify emerging needs with potential industry value and improve the efficiency of converting research outcomes into productivity.

EDUCATION

University of Pittsburgh **01/2020 – 05/2025 (Expected)**
Ph.D. in Industrial Engineering GPA: 3.88/4.0 *Pittsburgh, PA*

Johns Hopkins University **08/2017 – 05/2019**
Master of Science in Financial Mathematics GPA: 3.73/4.0 *Baltimore, MD*

Purdue University **08/2015 – 08/2017**
Bachelor of Science in Economics (Highest Distinction, Minor in Math) GPA: 3.94/4.0 *W Lafayette, IN*

China Agricultural University **08/2013 – 06/2015**
Bachelor of Science in Economics GPA: 3.91/4.0 *Beijing, China*

PUBLICATIONS

Hou, Y., Oleyaeimotlagh, Y., Mishra, R., Bidkhori, H., & Banerjee, T. (2024). Robust Quickest Change Detection in Nonstationary Processes. *Sequential Analysis*.

Hou, Y., & Bidkhori, H. (2024). Multi-feature SEIR Model for Epidemic Analysis and Vaccine Prioritization. *Plos-One*.

Hou, Y. & Bidkhori, H. (2022). Feature-modified SEIR Model for Pandemic Simulation and Evaluation of Intervention Approaches. *Winter Simulation Conference 2022* IEEE. (**Best Contributed Theoretical Paper Finalist**)

Liu, S., **Hou, Y.** & Spall, J. C. (2019). Distribution Estimation for Stochastic Approximation in Finite Sample Using A Stochastic Differential Equation Method. *53rd Annual Conference on Information Sciences and Systems (CISS)* IEEE.

WORKING PAPERS

Hou, Y., & Banerjee, T. Robust Quickest Change Detection with Sampling Control. (Submitted) *IEEE Transactions on Signal Processing*

Hou, Y., Bidkhori, H., & Banerjee, T. Robust Quickest Change Detection in Multi-Stream Non-Stationary Processes. (Submitted) *IEEE Transactions on Information Theory*

Lu, Z., & **Hou, Y.** Optimizing Selection of Locations for Electric Vehicles Charging Stations using DQN. (Ready to submit)

TEACHING

Probability and Statistics (Undergraduate Lecturer, 4.6/5.0) | *University of Pittsburgh* **08/2021 – 12/2023**
Statistical Analysis (Graduate Guest Lecturer) | *University of Pittsburgh* **02/2022 – 03/2022**
Interest Rate & Credit Risk (Graduate Teaching Assistant) | *Johns Hopkins University* **01/2019 – 05/2019**
Investment Science (Graduate Teaching Assistant) | *Johns Hopkins University* **08/2018 – 12/2018**

AWARDS & HONORS

Teaching Assistant of the Year | *University of Pittsburgh* **2023**
Professor Joel Dean Excellence in Teaching Award | *Johns Hopkins University* **2019**
Winning Paper of 8th Student Academic Competition | *International Association for Quantitative Finance* **2019**
Highest Academic Distinction | *Purdue University* **2017**

RESEARCH

Robust Quickest Change Detection in Non-Stationary Processes (Thesis) | *University of Pittsburgh* **05/2023**

- Developed novel algorithms to detect distribution shifts in non-stationary data processes
- Addressed multi-dimensional real-time data with unknown distributions
- Proved optimality in minimizing detection delay subject to false alarm constraint
- Achieved precise, rapid anomaly detection in aviation anomaly signals and COVID-19 outbreaks
- Applied data-efficient methods to reduce observation costs while ensuring effective detection

Efficient Transportation System Design of Electric Vehicles | *University of Pittsburgh* **09/2021**

- Developed optimal location strategies for EV charging stations and piles
- Targeted win-win-win scenario for consumers, manufacturers, and power grid operators
- Designed distributional robust formulations with minimal reliance on shared data in transportation
- Simulated real-world traffic and charging scenarios to validate approach
- Enhanced scheduling efficiency for vehicles and transportation systems using deep Q-learning

COVID pandemic modeling and optimal vaccine deployment | *University of Pittsburgh* **07/2020 – 01/2022**

- Optimized vaccination prioritization strategies to minimize pandemic infections
- Reformed SEIR epidemic model to incorporate demographic features for accurate pandemic simulation
- Improved accuracy and timeliness in forecasting confirmed cases
- Proposed and validated efficient strategies for vaccine prioritization to minimize pandemic impact

SKILLS

Languages: Python

Software: Latex, Adobe Photoshop, Adobe Audition (audio editing), Vegas (video editing)

Linguistic abilities: English (proficient), Mandarin (native)

RELEVANT COURSEWORK

Operational Research

Linear Programming	Convex Optimization	Robust Optimization	Supply Chain
Integer Programming	Network Optimization	Stochastic Optimization	

Machine Learning

Game Theory in Machine Learning	Algorithm Design and Analysis

Mathematics

Stochastic Processes	Real Analysis	Time Series	Linear Algebra

REFERENCE

Taposh Banerjee | **Assistant Professor** — **University of Pittsburgh**
Email: taposh.banerjee@pitt.edu — *Industrial Enigneering*

Hoda Bidkhori | **Assistant Professor** — **George Mason University**
Email: hbidkhor@gmu.edu — *Computational and Data Sciences*

Bo Zeng | **Associate Professor** — **University of Pittsburgh**
Email: bzeng@pitt.edu — *Industrial Enigneering*