Fardin Ganjkhanloo

Ph.D. Candidate
Department of Civil and Systems Engineering
Johns Hopkins University
Whiting School of Engineering

Shaffer Hall, 3400 N. Charles St.
Baltimore, MD 21218
443-310-5004
fardin.ganjkhanloo@jhu.edu
fardin.ganjkhanloo@gmail.com
fardinganjkhanloo.com

Education

Johns Hopkins University, Whiting School of Engineering *2019–Present*
Department Civil and Systems Engineering
Ph.D. in Civil and Systems Engineering

Johns Hopkins University, Whiting School of Engineering *2019–2023*
Department Civil and Systems Engineering
M.S. in Systems Engineering, GPA: 4+/4.0

Sharif University of Technology *2014–2018*
Department of Computer Engineering
B.S. in Computer Engineering: Software Engineering, GPA: 3.6/4.0

Sharif University of Technology *2012–2018*
Department of Civil Engineering
B.S. in Civil Engineering, Magna Cum Laude, GPA: 3.7/4.0

Research Interests

Operations Research, Data-Driven Decision Making, Risk Assessment and Management, Optimization Under Uncertainty, Network Optimization, Healthcare Systems Engineering, Healthcare Analytics, Health Disparities

Research Experience

Johns Hopkins University *2019–Present*
Baltimore, MD
Graduate Researcher

- Working with an interdisciplinary team from the Schools of Medicine and Engineering to develop FallPro, an automated fall risk assessment and preventative intervention recommender system for in-patients. This project, supported by the Doctor's Foundation Company, aims to enhance patient safety and improve care outcomes.
- Led a project on COVID-19 mortality disparities across U.S. counties (2020-2023), identifying key factors impacting mortality, highlighting disparities, and informing policy recommendations. Mentored junior researchers.
- Collaborated in developing advanced modeling and analytics for healthcare robust resource redistribution. The model aims to optimize hospital capacity management during demand surges, such as those experienced during the COVID-19 pandemic, focusing on efficient allocation of resources (e.g., beds, staff, equipment) across healthcare networks to maximize patient care and minimize system stress during crises.
- Member of the globally recognized Johns Hopkins COVID-19 Dashboard and Coronavirus Resource Center; developed data collection automation.
- Partnered with researchers from MIT's Computer Science and Artificial Intelligence Laboratory

(CSAIL) to develop robust optimization models for optimal network flow allocations on Wide Area Networks (WANs). These models are designed to maintain performance even in the face of certain system failures.

Publications

Peer-Reviewed

- Ganjkhanloo, F., et al. (2024).“Evolving Patterns of COVID-19 Mortality in US Counties: A Longitudinal Study of Healthcare, Socioeconomic, and Vaccination Associations.” *PLOS Global Public Health* (In press).
- Dong, E., et al. (2022). “The Johns Hopkins University Center for Systems Science and Engineering COVID-19 Dashboard: data collection process, challenges faced, and lessons learned.” *The Lancet Infectious Diseases*.

Under Review / Preprints

- Ganjkhanloo, F., et al. (2024). “Optimizing the Johns Hopkins Fall Risk Assessment Tool (JHFRAT) for Improved Fall Risk Identification”.
- Parker, F., et al. (2024). “Optimal Hospital Capacity Management During Demand Surges” Preprint.
- Ahmadi, F., et al. (2024). “Inverse Learning: Solving Partially Known Models Using Inverse Optimization”.
- Parker, F., et al. (2020). “Optimal resource and demand redistribution for healthcare systems under stress from COVID-19.” Preprint.
- Ahmadi, F., et al. (2020). “An open-source dataset on dietary behaviors and dash eating plan optimization constraints.” Preprint.

Working Papers

- Ganjkhanloo, F., Ghobadi, K. “Spatial-Aware Weighted Inverse Optimization: Leveraging Data Topology in Decision-Making Models”.
- Ganjkhanloo, F., Ghobadi, K. “Robust Network Flow Optimization: Multi-Level Adaptive Control with Limited Node Visibility”.
- Parker, F., et al. “Supervised Inverse Optimization”.

Invited Talks and Presentations

2024 Department of Medicine & Whiting School of Engineering Research Retreat, Baltimore, MD, USA *04/2024*
Poster: Automated Fall Risk Assessment and Prevention Tool, Improving Accuracy and Efficiency of JHFRAT

Production and Operations Management Society (POMS) 33rd Annual Conference, Orlando, FL, USA *05/2023*
Unveiling the Divide: Exploring the Association Between COVID-19 Mortality and Disparities

INFORMS Annual Meeting 2022, Indianapolis, IN, USA *10/2022*
Learning Diet Recommendations

Production and Operations Management Society (POMS) 32nd Annual Conference, Virtual *04/2022*
COVID-19 mortality and healthcare capacity: Did counties with higher hospital capacity have less COVID-19 mortality in 2020?

INFORMS Healthcare Conference 2021, Virtual *07/2021*
Healthcare Capacity and COVID-19 Mortality

Canadian Operations Research Society (CORS) Annual Meeting 2021, Virtual *08/2021*
Do counties with higher hospital capacity have less COVID-19 mortality?

Production and Operations Management Society (POMS) 31st Annual POMS Conference, Virtual *04/2021*
Establishing a Correlation Between Healthcare Capacity Attributes and the Number of Deaths Due to COVID-19

INFORMS Annual Meeting 2020, Virtual *11/2020*
Covid-19 Data Approaches And Healthcare Capacity

Honors and Awards

Finalist for the Johns Hopkins Department of Medicine & Whiting School of Engineering Research Retreat Excellence in Research Award *2024*

Recognized as an Outstanding Talent by Iran's National Elites Foundation *2014*

Accepted in the competitive application for double major in Computer Engineering, with GPA of 3.96 (18.6/20) *2014*

Ranked top 0.1% among more than 260,000 participants in National University Entrance Exam, Mathematics and Physics *2012*

Teaching Experience

Johns Hopkins University *Fall 2023, 2021*
Teaching Assistant
EN.560.650: Operations Research, Prof. Kimia Ghobadi

Johns Hopkins University *Spring 2022*
Teaching Assistant & Guest Lecturer
EN.560.250: Introduction to Mathematical Decision Making, Prof. Kimia Ghobadi

Sharif University of Technology *Fall 2015, Spring 2016*
Teaching Assistant
Structural Analysis II, Prof. Kiarash Mohtasham Dolatshahi

Sharif University of Technology *Spring 2014, Fall 2014, Spring 2015*
Teaching Assistant
Dynamics, Prof. Ali Bakhshi

Academic Service

Johns Hopkins INFORMS Student Chapter *2022–Present*
President & Former Vice President

Production and Operations Management Society (POMS) 32nd Annual POMS-Conference, Orlando, FL, USA *05/2023*
Session Organizer

Center for Systems Science and Engineering (CSSE) at Johns Hopkins University *2020–2021*
Data collection automation for the COVID-19 Dashboard

Professional Affiliations and Research Center Involvement

- Institute for Operations Research and Management Sciences (INFORMS)
- Manufacturing and Service Operations Management Society (MSOM)
- Health Applications Society (HAS)
- Society for Industrial and Applied Mathematics (SIAM)
- Malone Center for Engineering in Healthcare

Technical Skills

Operations Research & Optimization: Mathematical Modeling, Linear/Integer Programming, Stochastic Optimization, Heuristics, Simulation

Data Analysis & Statistics: Hypothesis Testing, Regression Analysis, Time Series Analysis, ANOVA, Exploratory Data Analysis

Programming: Python, Julia, R, MATLAB, SQL, MongoDB, Git

AI & Machine Learning: Deep Learning, Time Series Forecasting, Recommendation Systems

Media Mentions

JHU Coronavirus Resource Center (CRC) *March 2023*
Johns Hopkins University and Medicine

One size doesn't fit all: An AI approach to creating healthy personalized diets *November 2022*
Malone Center for Engineering in Healthcare News

One size doesn't fit all: An AI approach to creating healthy personalized diets *November 2022*
myScience.org

COVID-19 DASHBOARD CREATOR LAUREN GARDNER WINS LASKER-BLOOMBERG PUBLIC SERVICE AWARD *September 2022*
The Hub (Johns Hopkins University)

New COVID-19 dashboard helps users make informed decisions regarding hospital care *February 2021*
The Hub (Johns Hopkins University)

SEEING RED *Summer 2020*
The Hub (Johns Hopkins University)