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## ACADEMIC APPOINTMENT

**Georgia Institute of Technology** — **Atlanta, GA**
Carmine and Jean Iannacone Postdoctoral Fellow — Jan 2025 – Present
Industrial and Systems Engineering
*Supervisor:* Dr. Kamran Paynabar

## EDUCATION

**University of Florida** — **Gainesville, FL**
**Ph.D. in Industrial and Systems Engineering** — Aug 2021 – Dec 2024
Dissertation: Advanced tensor-based modeling for high-dimensional, distributed, and heterogeneous data.
*Academic advisor:* Dr. Mostafa Reisi Gahrooei

**Bogazici University** — **Istanbul, Turkey**
**M.S. in Industrial Engineering** — Sep 2018 – Jun 2021
Dissertation: Aggregation strategies for grid-based numerical weather predictions (NWP) to improve power curve models with meta-learning extension.
*Academic advisor:* Dr. Mustafa Gokce Baydogan

**B.S. in Industrial Engineering** — Sep 2013 – Jun 2018
Dean's high honor list

## RESEARCH INTERESTS

Human-centered AI and augmented/extended reality (AR/XR); Personalized healthcare analytics; Multimodal and high-dimensional data modeling; Digital twins and data-driven decision support; Federated and privacy-preserving analytics; Interpretable and robust machine learning.

## PUBLICATIONS

**Refereed Journal Papers** (accepted or published)

1. **Konyar, E.**, Paynabar, K. (2025). Discussion on "The Statistical Finite Element Method: A Theoretical Foundation for Digital Twins". *Quality Engineering*. (Just accepted)
2. Amini, M. **Konyar, E.**, Reisi Gahrooei, M. (2025). Federated Cooperative Generalized Linear Model for Distributed Multimodal Data Analysis. *IISE Transactions.* DOI: https://doi.org/10.1080/24725854.2025.2511666
3. **Konyar, E.**, Reisi Gahrooei, M. (2025). Semi-Supervised PARAFAC2 Decomposition for Computational Phenotyping Using Electronic Health Records. *IEEE Transactions on Biomedical and Health Informatics.* DOI: https://doi.org/10.1109/JBHI.2025.3530271
4. Nouri, M., **Konyar, E.**, Reisi Gahrooei, M., Ilbeigi, M. (2023). Detecting Traffic Anomalies During Extreme Events via a Temporal Self-Expressive Model. *IEEE Intelligent Transportation Systems Transaction, 1-14.* DOI: https://doi.org/10.1109/TITS.2024.3397034

5. **Konyar, E.**, Reisi Gahrooei, M., Zhang, R. (2023). Robust Generalized Scalar-on-Tensor Regression. *IISE Transactions,* 1-23. DOI: https://doi.org/10.1080/24725854.2023.2290110
    - *Featured in IISE Magazine.*
6. **Konyar, E.**, Reisi Gahrooei, M. (2023). Federated Generalized Scalar-on-Tensor Regression. *Journal of Quality Technology,* 1-18. DOI: https://doi.org/10.1080/00224065.2023.2246600
    - *Finalist for Best Student Paper Competition at the IISE Annual Meeting in the Quality Control and Reliability Engineering (QCRE) division, 2023*)
    - *Finalist for Best Paper Competition in the INFORMS Conference on Quality, Statistics, and Reliability, 2023*)

**Under Review**

7. **Konyar, E.**, Reisi Gahrooei, M., Paynabar, K. (2025+). Tensorized Multi-Task Learning for Personalized Modeling of Heterogeneous Individuals with High-Dimensional Data. *Informs Journal on Data Science.*

**Under Preparation**

8. **Konyar, E.,** Yoo, Steven, Moghaddam, M., Paynabar, K. (2025+) Modeling Human Expertise in Adaptive Augmented Reality Systems via Low-Rank Multimodal Representation Learning
9. Patalano, M., **Konyar, E.**, Paynabar, K. (2025+). PAR2COX: A Semi-Supervised Tensor-Based Cox Regression Framework for Phenotyping Using Electronic Health Records
10. Gorbunava, A., Zhang, Z., **Konyar, E.,** Paynabar, K., Shi, J. (2025+) Federated Mixed-Effects Models for Short-Run Process Monitoring
11. Gorbunava, A., **Konyar, E.,** Paynabar, K., Shi, J. (2025+) Robust Deep Tensor Regression for Anomalous High-Dimensional Data
12. **Konyar, E.**, Paynabar, K. (2025+) Uncertainty-Aware Multi-Sensor Network Monitoring with Partially-Observed Data via Reinforcement Learning

**Book Chapters**

13. Barry, G., **Konyar, E.**, Harvill, B., Johnstone, C. (2024). A Survey of Advances in Multimodal Federated Learning with Applications. *Springer Optimization and Its Applications.* DOI: https://doi.org/10.1007/978-3-031-53092-0_15

## RESEARCH EXPERIENCE

**Multimodal Data Fusion for Human-Centered AI and Augmented/Virtual Reality (AR/VR) Systems**

- Integrated multimodal sensor data (gaze, head, hand motion, physiological signals) to model human expertise, cognitive workload, and skill acquisition in real time.
- Contributed to the development of adaptive, user-aware AI systems for training, workforce development, and technology-enabled service environments.

**Computational Phenotyping and Risk Prediction from Multimodal Electronic Health Records (EHR)**

- Designed semi-supervised tensor-based models to extract interpretable patient phenotypes and predict outcomes from irregular, partially labeled EHR data.
- Applied these methods to large-scale intensive care unit data (MIMIC-IV), with focused case studies on sepsis, and demonstrated improved survival prediction and clinical interpretability.

**Privacy-Preserving and Federated Analytics for Healthcare and Complex Systems**

- Developed federated modeling frameworks that enable collaboration across institutions without sharing raw data, applied to Parkinson's disease telemonitoring, plant disease detection, and engine fault classification.

- Advanced methods for integrating high-dimensional and multimodal data under privacy and regulatory constraints; recognized in best paper competitions at the Institute of Industrial and Systems Engineers (IISE) and the Institute for Operations Research and the Management Sciences (INFORMS) Annual Meetings.

**Data-Driven Personalization in Telemonitoring and Neuroimaging for Diverse Populations**

- Developed multi-task tensor learning frameworks that capture shared patterns across subpopulations while enabling individualized predictions.
- Validated on real-world datasets, including mobile sensor data for Parkinson's severity and neuroimaging data for attention-deficit/hyperactivity disorder (ADHD) characterization.

**Data-Driven Forecasting and Decision Support in Energy and Transportation**

- Improved renewable energy forecasting through power curve estimation and meta-learning frameworks that adapt across environmental conditions.
- Designed a network monitoring approach that identified critical disruptions in Manhattan's transportation system during Hurricane Sandy to support urban resilience planning.

## TEACHING EXPERIENCE

**Guest Lecturer, Georgia Institute of Technology**

- High-dimensional Data Analytics (3 sessions), Spring 2025 - developed and delivered a new module on federated learning for data-rich environments, emphasizing applications to healthcare and organizational analytics.
- Statistical Methods (3 sessions), Spring 2025 - taught key concepts in hypothesis testing, ANOVA, and statistical modeling, incorporated coding exercises and applied case studies from real-world examples.

**Guest Lecturer, University of Florida**

- High-Dimensional Data Analytics (5 sessions), Spring 2024 - taught advanced methods for modeling complex data and connected them to real-world challenges.
- Industrial Quality Control (multiple sessions, Fall 2023-2024) - covered methods for monitoring and improving system performance and highlighted managerial applications in quality and reliability analytics.

**Graduate Teaching Assistant, University of Florida**

- Advanced Quality Management and Engineering for Business Processes, Fall 2022 - supported instruction in process improvement and data-driven management.
- Applied Probability Methods in Engineering, Fall 2021 - reviewed fundamental probability and statistics concepts to reinforce students' understanding of uncertainty and quantitative analysis.

**Graduate Teaching Assistant, Bogazici University**

- Statistical Forecasting & Time Series (multiple terms, 2020–2021) - assisted in teaching predictive modeling for demand forecasting and business and renewable energy applications.
- Supply Chain Management (Spring 2021) - supported instruction on logistics, inventory management, and operational decision-making.
- Stochastic Models in Operations Research (Fall 2020) - led tutorials on probabilistic modeling of complex systems.
- Overview and Orientation to Industrial Engineering (Spring 2020) – assisted in introducing students to systems thinking and analytical problem-solving.

**Undergraduate Student Assistant, Bogazici University**

- Systems Simulation (Spring 2018) - primarily assisted with grading; also led one tutorial session on simulation modeling for operations and business systems.
- Operations Research (Fall 2016) - supported course delivery through grading assignments.

## MENTORING EXPERIENCE

- Mentored visiting Ph.D. and doctoral students at Georgia Tech on projects including tensor-based survival

modeling [9], federated process monitoring [10], and robust deep learning methods [11].

- Supervised undergraduate and high school students at the University of Florida on research projects including federated learning for plant disease detection through Student Science Training Program (SSTP) and decentralized emergency communication networks.
- Guided students in developing research skills by connecting technical methods to applications in healthcare analytics and privacy-preserving modeling.

*Note: Reference numbers correspond to papers listed in the Publications section.*

## SELECTED HONORS AND AWARDS

- Recipient, European Network of Business and Industrial Statistics (ENBIS) Annual Meeting Knowledge Fund, University of Piraeus, Greece (2025).
- Recipient, Industrial & Systems Engineering Graduate Research Award, University of Florida (2024).
- Travel and registration support for the Joint Research Conference (2024) and QPRC (2022), funded by the National Science Foundation (NSF).
- Travel and registration award, FutureBAProf Workshop, Tippie Business School, University of Iowa (2023).
- Finalist, Best Paper Award, INFORMS ICQSR Conference (2023).
- Finalist, Best Student Paper Award, IISE Annual Meeting, QCRE Division (2023).
- Ranked top 10 of 247 participants in "Wind Power Forecasting for the Day-Ahead Energy Market" data challenge, Compagnie Nationale du Rhône (CNR) (2020).

## PRESENTATIONS

**Conference Talks & Invited Presentations:**

- Data-Driven Personalization in Telemonitoring and Neuroimaging for Diverse Populations, ENBIS-25 Conference (2025, Piraeus, Greece).
- Semi-supervised Tensor Decomposition for Computational Phenotyping Using Electronic Health Records, INFORMS Annual Meeting (2024, Seattle).
- Robust Generalized Scalar-on-Tensor Regression, INFORMS Annual Meeting (2023, Phoenix), IISE Annual Meeting (2023, New Orleans).
- Federated Generalized Scalar-on-Tensor Regression, INFORMS ICQSR (Best Paper Competition, 2023, Raleigh), IISE Annual Meeting (Best Student Paper Competition, 2023, New Orleans), INFORMS Annual Meeting (2022, Indianapolis).
- Federated Learning and Applications, Invited Talk, Air Force Institute of Technology (2022, Virtual).
- Meta-learning for Wind Power Forecasting, National Congress on Operations Research/Industrial Engineering (2021, Istanbul).

**Poster Presentations:**

- Semi-supervised Tensor Decomposition for Computational Phenotyping, Joint Research Conference on Quality, Industry, and Technology (2024, Waterloo).
- Temporal Modeling for Disruption Detection in Transportation Networks, TRB Annual Meeting (2023, Washington, D.C.).
- Federated Generalized Scalar-on-Tensor Regression, INFORMS Annual Meeting (Poster Competition, 2022, Indianapolis); QPRC (2022, Virtual).

## TEACHING INTERESTS

My teaching interests span both undergraduate and graduate levels, organized around four core areas:

1. **Statistics and Probability**: foundational methods for business analytics and decision-making under uncertainty.
2. **Data Analytics and Forecasting**: data mining, predictive modeling, and time series forecasting for

business and societal applications.

3. **Machine Learning and Human-Centered AI**: applied machine learning, deep learning, and human-centered AI for healthcare and business systems.
4. **Decision Analytics**: data-driven decision-making in complex systems, with emphasis on responsible and strategic use of analytics in organizations.

In addition to contributing to core analytics courses, I am eager to design new offerings that integrate AI, healthcare, and human-centered systems to equip students to use analytics responsibly in complex decision-making environments.

## SERVICE & PROFESSIONAL ACTIVITIES

**Conference Organizing & Leadership:**

- Organizer and Chair, *Advanced data analysis for interconnected and distributed systems*, INFORMS Annual Meeting, Seattle, WA (2024).
- Organizer and Chair, *Multimodal Data Analysis for Interconnected and Distributed Systems,* INFORMS Annual Meeting, Phoenix, AZ (2023).
- Session Chair, *DAIS-QCRE Joint Session and Process Monitoring and Control*, IISE Annual Conference, Seattle, WA (2022).
- Organization Committee, 40$^{th}$ National Congress on Operations Research/Industrial Engineering, Bogazici University, Istanbul (2021).

**Referee Activities:**

- Referee for Technometrics, IEEE Transactions on Automation Science and Engineering, Journal of Quality Technology, Operations Research Forum, Journal of Combinatorial Optimization, Frontiers in Physiology, Scientific Reports.
- Conference reviewer: IEEE Biomedical and Health Informatics Conference (2025).

**Professional Memberships:**

- Institute for Operations Research and the Management Sciences (INFORMS).
- European Network for Business and Industrial Statistics (ENBIS).

**Professional Service and Outreach:**

- Judge, K-12 InVenture Prize State Finals, Georgia Institute of Technology (2025).
- Judge, Career, Research, Innovation and Development Conference (CRIDC) Poster Competition, Georgia Institute of Technology (2025).
- Student Board Member, IISE Quality Control and Engineering Division (2024-2025).
- Vice President, INFORMS Student Chapter, University of Florida (2023-2024).
- Vice President (2022-2023) and Board Member (2021-2022), Industrial & Systems Engineering Graduate Student Organization (ISEGSO), University of Florida.