Siamak Khayyati

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Academic Positions

2023 – Now   **Assistant Professor of Business Analytics**, HEC Liege, Management School of the University of Liege

2021 – 2023   **Postdoctoral Researcher**, Business School, University of Mannheim, Mannheim, Germany

2020 – 2021   **Postdoctoral Researcher**, Operations Management, Koç University, Istanbul, Turkey

2013 – 2020   **Research Assistant**, Operations Management, Koç University, Istanbul, Turkey

Education

2013 – 2020   **Ph.D., Koç University**, Istanbul, Turkey

Advisor: *Prof. Barış Tan*

Research: design and control of production systems, artificial intelligence applications in manufacturing Dissertation: "Data-Driven Control of a Production System by Using Marking-Dependent Threshold Policy"

2013   **Sharif University of Technology**, Tehran, Iran

Industrial Engineering

Research Interests

Supply chain management

Dynamic programming and reinforcement learning

Stochastic programming

Machine learning applications in operations management and queueing systems

Sustainability through energy consumption control

Data-driven control of production/inventory systems

Publications

2023 Barış Tan, Oktay Karabağ and **Siamak Khayyati**. Production and Energy Mode Control of a Production- Inventory System. In European Journal of Operational Research 308, 1176-1187.

- **Editor's Choice paper in European Journal of Operational Research, January 2023**

2022 **Siamak Khayyati** and Barış Tan. A Machine Learning Approach for Implementing Marking-Dependent Production Control Policies. International Journal of Production Research 60.10: 3107-3128.

2022 Davood Pirayesh Negha, **Siamak Khayyati** and Fikri Karaesmen. An Integrated Data-Driven Method Using Deep Learning for a Newsvendor Problem with Unobservable Features. European Journal of Opera- tional Research.

2021 Barış Tan and **Siamak Khayyati**. Supervised Learning Based Approximation Method for Single-Server Open Queuing Networks with Correlated Interarrival and Service Times. International Journal of Production Research, 1-26.

2021 **Siamak Khayyati** and Barış Tan. Supervised-Learning-Based Approximation Method for Multi-Server Queueing Networks under Different Service Disciplines with Correlated Interarrival and Service Times. International Journal of Production Research: 1-25.

2021 **Siamak Khayyati** and Barış Tan. A Lab-Scale Manufacturing System Environment to Investigate Data-Driven Production Control Approaches. Journal of Manufacturing Systems 60: 283-297.

2020 **Siamak Khayyati** and Barış Tan. Data-Driven Control of a Production System by Using Marking-Dependent Threshold Policy. International Journal of Production Economics, 226:107607, ISSN 0925-5273.

2023 Barış Tan, Oktay Karabağ and **Siamak Khayyati**. Energy-efficient Production Control of a Make-to-Stock System with Buffer- and Time-Based Policies. Under second round of revisions with the International Journal of Production Research.

Selected Working Papers:

Siamak Khayyati, Armin Sadeghi and Arezou Rahimi. An Efficient Solution Method for the Multi-parcel Hybrid Delivery Operations. preparing for initial submission.

Barış Tan, **Siamak Khayyati** and Oktay Karabağ. Energy-Efficient Resource Scheduling of a Single Resource with Production Requirements: A Joint Simulation and Scenario-Based Mathematical Programming Approach. preparing for initial submission.

Siamak Khayyati, Seyyed Mohammad Zenouzzadeh and Raik Stolletz. A Machine Learning Approach for the Analysis of $M(t)/M/1$ Time-Dependent Queues: ML4TDQ. preparing for initial submission.

Barış Tan, **Siamak Khayyati** and Matteo Masterangelo. Analysis of Finite-Buffer Queueing Networks Using Machine Learning Approaches. preparing for initial submission.

▬▬▬ Grants & Projects

2020-2025 **Co-investigator: 1001-TÜBİTAK (The Scientific and Technological Research Council of Turkey), 1,650,000 TRY**

"Design and Implementation of Data-Driven Production, Material Flow, and Energy Mode Control Systems with Energy and Cost Efficiency Considerations in Production Systems".

2020-2023 **Researcher: STO 789/5-2 Deutsche Forschungsgemeinschaft**

"Performance Analysis and Capacity Planning for Stochastic Systems with Cut-Off Service Levels".

2018-2020 **Researcher: H2020-ECSEL Research and Innovation Actions**

Funded by the European Union

"Productive 4.0: Electronics and ICT as Enabler for Digital Industry and Optimized Supply Chain Management Covering the Entire Product Life-cycle".

The Productive 4.0 project was a collaboration between more than 100 industry and academic partners.

▬▬▬ Teaching Interests

Supply chain analytics

Machine learning

Dynamic and stochastic optimization

Decision analysis

Teaching & Supervision Experience

As Primary Instructor

HEC Liege, Management School of the University of Liege

Statistics	*1 Semester*
Database for Management	*1 Semester*

As Co-Instructor

University of Mannheim

Business Analytics: Modeling and Optimization

1 Semester, Lecture and exercises

Business Analytics: Introduction to Operations
Analytics with Python

1 Semester, Lecture and exercises

Supervision of Master's and Bachelor's thesis	*1 Semester*

As Teaching Assistant

Koç University

Engineering Economics	*3 Semesters, exercises*
Operations Research Applications	*1 Semester, exercises*
Facilities and Operations Design	*2 Semesters, exercises*
Decision Analysis	*1 Semester, exercises*

Sharif University of Techlonogy

Project Control	*1 Semester, exercises*
System Dynamics	*1 Semester, exercises*

Conferences & Workshops

2023 Karabag, O., Tan B. and Khayyati S. "Production and Energy Mode Control of a Production-Inventory System"

21st INFORMS Applied Probability Society Conference, Nancy, France

2023 **Khayyati, S.**, Foroughi, A. and Stolletz, R. "A Hybrid Approximation Method for Time-Dependent Queues in Service Systems"

21st INFORMS Applied Probability Society Conference, Nancy, France

2022 **Khayyati, S.**, Zenouzzadeh, S. M. and Stolletz, R. "A Machine Learning Approach to the Performance Evaluation of Time-dependent Queues"

XIIIth Conference on Stochastic Models of Manufacturing and Service Operations, Autrans, France

2022 Tan, B. and Khayyati, S. "Performance Evaluation of Manufacturing Systems by Joint Use of Analytical Models, Simulation, and Supervised Learning"

XIIIth Conference on Stochastic Models of Manufacturing and Service Operations, Autrans, France

2019 **Khayyati, S.** and Tan, B. "Data-driven control of a production system with partially observable correlated arrival processes"

XIIth Conference on Stochastic Models of Manufacturing and Service Operations, Goslar, Germany

2015 Summer School on Game Theory and Algorithms, Lake Como School of Advanced Studies, Lake Como, Italy

Service

Organizations Committee

2015 18th INFORMS Applied Probability Conference, Koç University, Istanbul, Turkey

Refereed Journals

Central European Journal of Operations Research

Expert Systems With Applications

Soft Computing

Languages

English (Fluent). Other: Azeri (Native), Persian (Native), Turkish (Fluent)

Scholarships

2018 Scholarship from The Scientific and Technological Research Council of Turkey (TÜBİTAK), Istanbul, Turkey

2013 Merit-based Scholarship from Koç University, Istanbul, Turkey

2006 Merit-based Scholarship from Sharif University of Technology, Tehran, Iran

Technical Skills

General Computer Programming	Matlab, C/C++/C#, R, Python, SQL, PHP, Experience with computer clusters
Mathematical Programming	CPLEX, GUROBI, MOSEK, GAMS, AMPL, Mathematica
Machine Learning	scikit-learn (python), mlr/caret (R), Statistics and Machine Learning Toolbox (Matlab)
Special Purpose Programs	LaTeX, Tableau, MS Office Pack (Excel, Word, Power Point, Access)