# Ashkan Safari

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## Personal Information

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## Professional Summary

PhD in Operations Research with hands-on experience in designing, implementing, and analyzing optimization algorithms for complex scheduling and routing problems. Strong background in mathematical modeling, data analysis, and machine learning, with solid software development skills (Python, C++, SQL). Experienced in translating theoretical models into scalable, data-driven solutions. Passionate about solving real-world industrial challenges in logistics, supply chain, and analytics-driven decision making.

## Key Competencies

- Optimization Algorithms
- Mathematical Modeling
- Supply Chain Management
- Data Analysis
- Critical Thinking & Analytical Problem Solving
- Strong Communication & Teaching Skills
- Team Work & Cross-Functional Collaboration
- Machine Learning & Predictive Modeling

## Projects

⇒: **Optimization in Makespan Scheduling Problem (PhD Project)**

↪: Developed and analyzed local search algorithms for Identical machine scheduling problem

↪: Implemented the proposed algorithm in Python

↪: GitHub: github.com/a-safari/k-swap

↪: Paper 1 (Computers & OR): A k-swap local search for makespan scheduling

↪: Paper 2 (OR Letters): Smoothed analysis of the k-swap neighborhood for makespan scheduling

⇒: **Time-dependent Ant Colony Optimization (ACO) (PhD Project)**

↪: Analyzed the convergence properties and computational efficiency of time-dependent ACO variants

↪: Paper (arXiv preprint): arxiv.org/abs/2501.10810

⇒: **Weighted Region Shortest Path Problem (Master's Project)**

↪: Developed exact algorithms for computing minimum-cost paths in weighted polygonal subdivisions under the Manhattan metric

↪: Paper (Graphs and Combinatorics): Path Planning in a Weighted Planar Subdivision Under the Manhattan Metric

⇒: **Persian Sign Language Translator (AvaNama) (Bachelor's Project)**

↪: Developed an assistive application for converting speech/text to Persian sign language

↪: Implemented using Unity game engine and C#, with 3D animations created in Blender

↪: Website: www.avanama.org

## Skills

**Languages**: English (Fluent), Persian (Native), Azeri (Native), Dutch (Beginner)

**Programming Languages**: Python, C++, C#, PHP, JavaScript, Erlang

**Databases**: SQL, NoSQL

**Others**: Git, Microsoft Office

## Education

**Maastricht University (UM)** **Maastricht, The Netherlands**
*Ph.D. Candidate (Defended on 21 January 2026)* *2021–2025*
***Project Domain:*** *Mathematics/Computer Science/Operations Research*
***Supervisors:*** *Prof. Dr. Tjark Vredeveld and Dr. Lars Rohwedder*
***Selected Coursework*** *(LNMB Programme)**: Algorithms & Complexity, Interior Point Methods, Algorithmic Game Theory, Cooperative Games with Applications to OR, and Randomized Algorithms*

**Institute for Advanced Studies in Basic Sciences (IASBS)** **Zanjan, Iran**
*M.Sc. (Master of Science) in Computer Science* *2018–2021*
***GPA:*** *19.81/20.00, total 37 credits completed, class rank: 2 of 14*
***Supervisor:*** *Dr. Mansoor Davoodi Monfared*
***Selected Coursework:*** *Advanced Algorithms, Approximation Algorithms, Computational Geometry, Robot Motion Planning, Machine Learning, and Multi-Agent Systems*

**Institute for Advanced Studies in Basic Sciences (IASBS)** **Zanjan, Iran**
*B.Sc. (Bachelor of Science) in Information Technology Engineering* *2014–2018*
***GPA:*** *18.57/20.00, total 210 credits completed, class rank: 2 of 46*
***Supervisor:*** *Dr. Mansoor Davoodi Monfared*
***Selected Coursework:*** *Data Structures, Algorithm Design, Discrete Mathematics, Operations Research, Probability & Statistics, Programming, Operating Systems, Software Engineering, Database Design, Artificial Intelligence, and Computer Networks*

## Teaching and Mentorship

⇒: **Thesis Supervision**

↪: Supervised a bachelor thesis, "An Ant Colony Optimization Approach to the Weighted Region Problem" (2024), providing academic and research support.

⇒: **Tutor**

↪: School of Business and Economics (SBE), Maastricht University (UM), Maastricht, The Netherlands

↪: Course Titles: Management of Operations and Product Development (2025), Operations Research (2023-2024), Operations and Supply Chain Management (2021-2024), and Operations Management for Business Analysis (2022)

↪: Overall Evaluation Grade: 8.00

⇒: **Teaching Assistant**

↪: Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran

↪: Course Titles: Algorithm Design (2018-2020), Data Structures (2015, 2018-2020) and AI (2017)

↪: Performed all regular TA duties, including weekly lectures, office hours, and grading for undergraduates.

## Publications

- L. Rohwedder, **A. Safari**, and T. Vredeveld, A k-swap local search for makespan scheduling, Computers & Operations Research (2025): 107168.
- L. Rohwedder, **A. Safari**, and T. Vredeveld, Smoothed Analysis of the k-Swap Neighborhood for Makespan Scheduling, Operations Research Letters (2025): 107244.
- M. Davoodi and **A. Safari**, Path Planning in a Weighted Planar Subdivision Under the Manhattan Metric, Graphs and Combinatorics 40.1 (2024): 16.
- M. Davoodi, H. Enamzadeh and **A. Safari**, Path Planning in a Weighted Planar Subdivision Under the Manhattan Metric, In Proceedings of the 32nd Canadian Conference on Computational Geometry (CCCG), University of Saskatchewan, 2020.

## Workshops and Conferences Attendance

- Joint ORBEL - NGB Conference on Operations Research, The Netherlands, 2025.
- Workshop on Models and Algorithms for Planning and Scheduling Problems (MAPSP), Denmark, 2024.
- Conference on the Mathematics of Operations Research (LNMB), The Netherlands, 2023 & 2024.
- Workshop on Models and Algorithms for Planning and Scheduling Problems (MAPSP), Italy, 2022.
- Winter School on Computational Geometry (WSCG), Iran, 2019

## Personal Interests

- Cycling
- Recreational Tennis
- Board Games

## References

**Prof. Dr. Tjark Vredeveld**

Full Professor at Department of Quantitative Economics, School of Business and Economics, Maastricht University (UM), Maastricht, The Netherlands.

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**Dr. Lars Rohwedder**

Associate Professor at Department of Mathematics and Computer Science, University of Southern Denmark (SDU), Odense, Denmark.

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**Dr. Mansoor Davoodi Monfared**

Assistant Professor at Department of Computer Science and Information Technology, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran.

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