MOSTAFA MOHAMMADI, Ph.D.

Bio Sketch

Mostafa Mohammadi is a Postdoctoral Fellow in Logistics and Operations Research at the Department of Industrial Economics and Technology Management, Norwegian University of Science and Technology (NTNU). He earned his PhD in Transport Systems Engineering from Sapienza University of Rome, graduating *cum laude* with a dissertation titled *"Stochastic Programming for the Optimization of Sustainable Urban Logistics."* His doctoral research advanced stochastic optimization methods to enhance resilience and sustainability in urban freight systems, bridging rigorous methodology with pressing societal and industrial needs.

Mostafa's research focuses on the design, optimization, and digital transformation of supply chains and logistics systems. He combines quantitative methods including stochastic programming, simulation, and AI-based modeling with **qualitative approaches** such as case research and conceptual modeling. This interdisciplinary balance allows him to address both theoretical challenges and practical implementation. His publications in *Journal of Cleaner Production, Renewable and Sustainable Energy Reviews, Expert Systems with Applications*, and *Journal of Industrial Information Integration* contribute to topics such as electric vehicle routing, Industry 4.0 applications in logistics, smart waste management, and cold-chain optimization. His research team was a finalist in the *Transportation Science and Logistics (TSL) Meituan 2024 Data-Driven Research Challenge*, with results to be presented at the *INFORMS Annual Meeting 2025*.

At NTNU, Mostafa plays an active teaching role across multiple programs. He lectures in *Logistics Systems and Simulation Modelling (TLOG2011)* and *Production Planning and Quality Management (TLOG2008)*, integrates applied modeling into course design, and delivers workshops such as LaTeX training for bachelor's theses. He also contributes to *Applied Programming (TDT4114)* by providing subject support on logistics applications. He supervises and co-supervises bachelor's theses with strong industrial links, including projects with **TINE Company** and **St. Olavs Hospital**, addressing real challenges in logistics system design and operations. Previously, at Sapienza University of Rome, he lectured in graduate-level courses including *Freight and Logistics, Transport Policy, Traffic Systems Engineering and ITS,* and *Programming for Transportation and Supply Chain*. He has supervised numerous master's theses on last-mile logistics, sustainable distribution, and disruption management, always emphasizing reproducibility, professional communication, and industry relevance.

Beyond academia, Mostafa brings valuable industrial experience. As Planning Manager at Aras Taban, he implemented predictive maintenance strategies and optimized material flows, improving machinery availability and reducing inventory costs. As Operations Control Supervisor at Beryan Goosht Amol, he restructured production scheduling, resolved bottlenecks, and significantly improved operational efficiency. These experiences continue to inform his applied research and teaching, ensuring strong links between academic concepts and practical supply chain challenges.

Mostafa also collaborates internationally with leading institutions. At **Eindhoven University of Technology (TU/e)**, he works with Professor Tom Van Woensel on dynamic vehicle routing with stochastic demands and charging strategies for electric fleets. At the **Technical University of Munich (TUM)**, he contributes to research on data-driven food delivery optimization and disruption management.

Current Positions

Oct 2024 – · · ·   **Postdoctoral Fellow**, Department of Industrial Economics and Technology Management, Norwegian University of Science and Technology (NTNU), Trondheim, Norway. Collaborative research in logistics systems optimization, with a focus on stochastic programming and decision-support tools for sustainable supply chains.

Employment History

Nov 2021 – Oct 2024	**Doctoral Researcher,** Sapienza University of Rome, Rome, Italy. Tutored courses in supply chain, traffic systems, and programming for transportation. Supervised master's theses on vehicle routing, electric mobility, and IoT-based logistics.
Jan 2021 – Aug 2021	**Optimization Intern (Remote, Unpaid),** University of Jyväskylä, Finland. Implemented the IBEA method in DESDEO, an open-source framework for interactive multi-objective optimization.
Dec. 2017 – Sep. 2019	**Planning Manager**, Aras Taban, Amol, Iran. Led supply chain optimization by analyzing material flows, establishing new distribution channels, and creating dedicated routes to maximize profitability. Investigated current inventory needs and forecasted future sales.
Jan 2012 – Aug 2017	**Operations Control Supervisor,** Beryan Goosht Amol, Amol, Iran. Planned production schedules, optimized sequencing, and improved operational efficiency by identifying and resolving bottlenecks.

Education

Nov 2021 – Oct 2024	**Ph.D. in Infrastructures and Transportation Engineering, Sapienza University of Rome** (QS Ranking: 134, Italy). Thesis: *Stochastic Programming for Optimizing Sustainable Urban Logistics: Multi-Period Production-Routing and Reverse Logistic* . Result: **Cum Laude** Supervisor: Prof. Chiara Colombaroni Co-Supervisor: Prof. Gaetano Fusco
Sep 2019 – Jul 2021	**Master's Degree in Transportation System Engineering, Sapienza University of Rome** (QS Ranking: 134, Italy). Thesis: *Heuristic approaches to address vehicle routing problem in the Iot-based waste management system.* Final Grade: 110 e lode **(Cum Laude)** Erasmus student at University of Zilina, Slovakia. Awards: Top 1% student at Sapienza;
Sep 2011 – Aug 2014	**Master's Degree in Industrial Engineering, Mazandaran University of Science and Technology** (Iran). Thesis: *Makespan minimizing on multiple travel salesman problem with a learning effect of visiting time.* Final Grade: 16.16 out of 20
Sep 2008 – Sep 2011	**Bachelor's Degree in Industrial Engineering, Shomal University** (Iran). Final Grade: 17.56 out of 20 – Excellent Award: 3rd ranked among all bachelor's students in Industrial Engineering (2011)

Research Publications

Journal Articles

1. G. Rahmanifar, M. Mohammadi, M. Hajiaghaei-Keshteli, C. Colombaroni, G. Fusco, and F. Gholian-Jouybari, "Two-echelon electric vehicle routing problem with battery swap stations on real network," *IFAC-PapersOnLine*, vol. 58, no. 5, pp. 46–51, 2024. DOI: 10.1016/j.ifacol.2024.07.062.

2. G. Rahmanifar et al., "Integrated location and routing for cold chain logistics networks with heterogeneous customer demand," *Journal of Industrial Information Integration*, vol. 38, p. 100 573, 2024. DOI: 10.1016/j.jii.2024.100573.

3   M. Hajiaghaei-Keshteli et al., "Designing a multi-period dynamic electric vehicle production-routing problem in a supply chain considering energy consumption," *Journal of Cleaner Production*, vol. 421, p. 138 471, 2023. 🔗 DOI: 10.1016/j.jclepro.2023.138471.

4   O. Hashemi-Amiri, M. Mohammadi, G. Rahmanifar, M. Hajiaghaei-Keshteli, G. Fusco, and C. Colombaroni, "An allocation-routing optimization model for integrated solid waste management," *Expert Systems with Applications*, vol. 227, p. 120 364, 2023. 🔗 DOI: 10.1016/j.eswa.2023.120364.

5   M. Mohammadi, G. Rahmanifar, M. Hajiaghaei-Keshteli, G. Fusco, and C. Colombaroni, "Industry 4.0 in waste management: An integrated iot-based approach for facility location and green vehicle routing," *Journal of Industrial Information Integration*, vol. 36, p. 100 535, 2023. 🔗 DOI: 10.1016/j.jii.2023.100535.

6   M. Mohammadi, G. Rahmanifar, M. Hajiaghaei-Keshteli, G. Fusco, C. Colombaroni, and A. Sherafat, "A dynamic approach for the multi-compartment vehicle routing problem in waste management," *Renewable and Sustainable Energy Reviews*, vol. 184, p. 113 526, 2023. 🔗 DOI: 10.1016/j.rser.2023.113526.

7   G. Rahmanifar, M. Mohammadi, A. Sherafat, M. Hajiaghaei-Keshteli, G. Fusco, and C. Colombaroni, "Heuristic approaches to address vehicle routing problem in the iot-based waste management system," *Expert Systems with Applications*, vol. 220, p. 119 708, 2023. 🔗 DOI: 10.1016/j.eswa.2023.119708.

8   M. P. Valentini et al., "A platform to optimize urban deliveries with e-vans: Dealing with vehicles range and batteries recharge," *TeMA-Journal of Land Use, Mobility and Environment*, vol. 16, no. 2, pp. 403–423, 2023. 🔗 DOI: 10.6093/1970-9870/9911.

Conference Proceedings

1   G. Rahmanifar, M. Mohammadi, T. V. Woensel, and A. Ashrafian, "Diana-based dynamic sub-zoning for dynamic multi-compartment vehicle routing problem in reverse logistics," in *Proceedings of the INFORMS Transportation Science & Logistics (TSL) Workshop*, Presented at INFORMS TSL Workshop 2025, Seoul, South Korea, May 2025.

2   C. Colombaroni, G. Fusco, M. Mohammadi, and G. Rahmanifar, "A Time-Dependent Electric Vehicle Routing Problem with Recharging Stations," in *Transportation Research Board (TRB) Annual Meeting*, Presented at 103 TRB Annual Meeting, Washington, D.C., USA, 2024.

3   M. Mohammadi, G. Rahmanifar, C. Colombaroni, G. Fusco, and M. Hajiaghaei-Keshteli, "Discrete choice-based optimization approach for dynamic large-scale multi-compartment vehicle routing in reverse logistics," in *Proceedings of the Conference in Emerging Technologies in Transportation Systems (TRC-30)*, Extended abstract submitted for presentation, Crete, Greece, Sep. 2024. 🔗 URL: https://trc-30.epfl.ch/wp-content/uploads/2024/09/TRC-30_paper_166.pdf.

4   G. Rahmanifar and M. Mohammadi, "A MILP Approach for Pickup and Delivery Vehicle Routing in Last-Mile Delivery Using Modular Electric Vehicles," in *Proceedings of OR 2024: Data, Learning, and Optimization*, Presented at OR 2024 (Sept3–6), Munich, Germany, Sep. 2024.

5   G. Rahmanifar, M. Mohammadi, M. Hajiaghaei-Keshteli, C. Colombaroni, G. Fusco, and F. Gholian-Jouybari, "Two-echelon electric vehicle routing problem with battery swap stations on real network," in *Proceedings of the 7th IFAC Conference on Analysis and Control of Nonlinear Dynamics and Chaos (IFAC ACNDC 2024)*, Presented at IFAC ACNDC 2024, June 5–7, London, Imperial College London, UK, Jun. 2024.

Books and Chapters

1   G. Rahmanifar, M. Mohammadi, M. Hajiaghaei-Keshteli, G. Fusco, and C. Colombaroni, "Data-driven decision-making approach for last mile delivery to handle uncertainty: Challenges and opportunities," in In press, currently in proof stage, Springer, 2025.

Ongoing Publication

1 S. Bakker, M. Mohammadi, M. Stålhane, and J. Stafseng, *Synchronising rest and charging decisions in the electric vehicle truck driver scheduling problem*, 2025.

2 M. Mohammadi, G. Rahmanifar, S. J. Bakker, T. V. Woensel, and M. S. Hajiaghaei-Keshteli, *Temporal granularity and charging strategies in time-dependent electric vehicle routing*, Working paper, in preparation, 2025.

3 M. Mohammadi, G. Rahmanifar, N. Kuttruff, and S. Minner, *A continuous markov decision process approach to data-driven real-time food delivery optimization*, 2025.

4 G. Rahmanifar, M. Mohammadi, S. J. Bakker, and T. V. Woensel, *A clustering-based adaptive sub-zoning approach for dynamic vehicle routing problem with stochastic requests (dvrp-sr)*, 2025.

Skills

Languages	Strong reading, writing, and speaking competencies in English. Basic proficiency in Norwegian - bokmål (A1). Native Persian speaker.
Programming	Python, MATLAB, C++, SQL.
Traffic & Transport Tools	PTV VISUM, TransCAD, Flexsim, AnyLogic
Artificial Intelligence & ML	Reinforcement Learning, Predictive Analytics, PyTorch for AI model development
Databases	MySQL, PostgreSQL
GIS Tools	QGIS, ArcGIS
Web Dev	HTML, JavaScript

Awards and Achievements

2025	**Top 1% Distinguished PhD Student**, Sapienza University of Rome.
2024	**Finalist**, TSL Meituan 2024 Data-Driven Research Challenge.
2023–2024	**Tutorship Award**, Freight Transport and Logistics – Sapienza University.
2023	**Tutorship Award**, Transport Policy – Sapienza University.
2022–2023	**Tutorship Award**, Programming in Transportation – Sapienza University.
2022–2023–2024	**Tutorship Award**, Traffic System Engineering – Sapienza University.
2022	**Top 1% Distinguished Master's Student**, Sapienza University of Rome.
2020	**Erasmus+ Study Award**, University of Žilina.
	Erasmus+ Internship Award, University of Jyväskylä.