GOLMAN RAHMANIFAR, Ph.D.

Bio Sketch

I am a Postdoctoral Fellow in Freight Transport and Logistics within the Operations, Planning, Accounting, and Control (OPAC) group at the Department of Industrial Engineering & Innovation Sciences, **Eindhoven University of Technology (TU/e)**, the Netherlands. I hold two Master's degrees, both awarded cum laude: one in Industrial Engineering and the other in Transport Systems Engineering. I subsequently earned my PhD in Transport and Infrastructure, also conferred **cum laude**, in recognition of academic excellence. My doctoral dissertation, titled "Green Vehicle Routing and Logistics Optimization: IoT-Driven Solutions for Modern Urban Challenges," focused on the integration of Internet of Things (IoT) technologies with advanced optimization methodologies to improve the sustainability, efficiency, and resilience of urban freight transport systems.

My research addresses complex challenges in freight transport and logistics through advanced analytical methods. I specialize in developing Operations Research models and Artificial Intelligence techniques including integer programming, branch and price, machine learning, and reinforcement learning to optimize supply chains, enhance transportation efficiency, and improve logistics networks. My work is frequently conducted in collaboration with industry partners, ensuring both scientific rigor and practical relevance.

Currently, I am involved in the applied research project Circulaire Stromen Next Level Logistics (CS NLL). This project integrates Operations Research methodologies with Digital Twin technology to support real-time data-driven decision-making in cooperative logistics. The aim is to reduce total logistics costs while enhancing network responsiveness and adaptability through simulation-based optimization, predictive analytics, and integration with Transport Management Systems. The project involves close collaboration with 15 logistics service providers and three knowledge partners including TNO and Breda University of Applied Sciences. In addition to my research, I am engaged in both teaching and supervision. At TU/e, I lecture in the courses Urban Mobility Startups for Livable Cities (Q4). Previously, I also served as a lecturer at Sapienza University of Rome, teaching courses in Freight and Logistics, Transport Policy, Traffic Systems Engineering and ITS, and Programming for Transportation for master program. On the supervision side, I currently mentor four Master's students (three from Sapienza University and one from TU/e) and one Bachelor's student at TU/e. Previously, I supervised six Master's theses at Sapienza University, focused on applied topics such as vehicle routing, electric mobility, last mile delivery, and smart waste management.

I remain involved in research, with over ten peer-reviewed publications and more than **320 citations** (**h-index 8**, Google Scholar). My work has been published in high-impact journals such as Renewable and Sustainable Energy Reviews and the Journal of Cleaner Production. A recent highlight of my research is our team's selection as a **finalist** in the **TSL Meituan 2024 Data-Driven Research Challenge**. Our algorithm was recognized for its technical strength and practical applicability, and it will be presented at the *INFORMS Annual Meeting 2025* in Atlanta. This recognition reflects my ability to apply theoretical models to real-world logistics challenges.

To further improve my teaching and supervision skills, I am currently completing the University Teaching Qualification program (UTQ) at TU/e. This includes modules on teaching, supervision, curriculum design, and assessment, as part of my preparation for a future academic career as a university professor.

Current Positions

2025 – · · · · **Postdoctoral Fellow**, Department of Industrial Engineering and Innovation Sciences, Operations Planning, Accounting & Control group, Eindhoven University of Technology (TU/e).

Employment History

Jan 2022 – Dec 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.

Sept 2023 – Dec 2023 — **Digital Transformation Intern (Unpaid),** Almaviva, Rome, Italy. Conducted statistical and clustering-based assessment of variable speed limits on Veneta motorways as part of PhD program. Focused on digital transformation solutions in logistics.

Jan 2022 – Dec 2024 — **International Student Advisor,** Sapienza University of Rome, Italy. Provided academic and logistical support to international graduate students, assisting with integration and administrative processes.

Jan 2021 – Dec 2024 — **Research Assistant (Remote, Unpaid),** Smart and Sustainable Logistics Lab, Tecnológico de Monterrey, Mexico. Focused on AI-based and IoT-enabled waste management systems. Developed heuristic approaches for vehicle routing and electric vehicle production-routing in smart supply chains.

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.

Feb 2012 – June 2014 — **Supply Chain Planning Supervisor,** Solico Group, Amol, Iran. Managed production and MRP II systems. Optimized resource allocation and monitored KPIs. Conducted feasibility studies and improved supply chain efficiency.

Jan 2021 – Aug 2021 — **Operations Control Supervisor,** Beryan Goosht Amol, Amol, Iran. Planned production schedules, optimized sequencing, and improved operational efficiency by identifying and resolving bottlenecks.

Education

Jan 2022 – Dec 2024 — **Ph.D. in Infrastructures and Transportation Engineering, Sapienza University of Rome** (QS Ranking: 134, Italy).
Thesis: *IoT-Driven Solutions for Modern Urban Challenges, focused on innovative approaches to urban logistics and transportation.*
Result: **Excellent**
Promoter: Prof. Gaetano Fusco
Co-promoter: Prof. Chiara Colombaroni
External Supervisor: Prof. Mostafa Hajiaghaei-Keshteli

Sep 2019 – Jul 2021 — **Master's Degree in Transportation System Engineering, Sapienza University of Rome** (QS Ranking: 134, Italy).
Thesis: *A dynamic approach for the multi-compartment vehicle routing problem in waste management.*
Final Grade: 110 e lode **(Cum Laude)**
Erasmus student at University of Zilina, Slovakia.
Awards: Top 1% student at Sapienza;

Education (continued)

Sep 2011 – Aug 2014 **Master's Degree in Socioeconomic Systems Engineering (Industrial Engineering), Mazandaran University of Science and Technology** (Iran).
Thesis: *Simulation of inventory level in supply chain management.*
Final Grade: 18.29 out of 20 – Excellent
Award: 2nd ranked among all graduates in 2014

Sep 2008 – Sep 2011 **Bachelor's Degree in Industrial Engineering, Shomal University** (Iran).
Final Grade: 16.29 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. Golabian, *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.
2. 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.
3. M. Hajiaghaei-Keshteli, G. Rahmanifar, M. Mohammadi, *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, F. Carrese, C. Colombaroni, *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. G. Rahmanifar, M. Mohammadi, S. J. Bakker, T. V. Woensel, and M. Hajiaghaei-Keshteli, *A multi-granular time-dependent electric vehicle routing with partial recharging under realistic traffic constraints*, Working paper, in preparation, 2025.

2. G. Rahmanifar, M. Mohammadi, and N. Kuttruff, *Data-driven real-time online platform food delivery optimization*, 2025.

Skills

Languages	Strong reading, writing, and speaking competencies in English. Basic proficiency in Italian (A2). 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
Teaching and Supervision	University Teaching Qualification (UTQ) for Dutch Universities

Awards and Achievements

2025	**Top 1% Distinguished PhD Student**, Sapienza University of Rome.
2024	**Finalist**, TSL Meituan 2024 Data-Driven Research Challenge.

Awards and Achievements (continued)

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.