

Mohammad Ali Arman



CURRENT EMPLOYMENT

Doctor of Philosophy in Engineering Science, Traffic, and Transportation
Senior Researcher (January 2024 so far)
Katholieke Universiteit Leuven
Industrial Management/Traffic and Infrastructure (CIB),
Arenberg, Celestijnenlaan 300, 3001 Leuven
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ResearchGate Profile: http://www.researchgate.net/profile/Mohammad_Ali_Arman
Personal Website: <https://maarman.github.io/>

HONORS

- Accepted as the National Exceptional Talent by the Iran National Elite Foundation, 2013.
- Graduated as a **distinguished student** in master of transportation engineering, 2012.
- Writer and presenter of best paper in Traffic Flow Theory panel in 12th International Conference on Traffic and Transportation Engineering in Tehran (2013).

RESEARCH INTERESTS

Data Analysis: Data fusion, Data mining, Statistical inference, Application of AI in data science.

Behavioural Economics: Discrete choice analysis and modelling, Analysis of consumer (traveller) behaviour, Demand analysis, Simulation.

Traffic Flow Studies: Empirical analysis, Studying and analysing trajectory data, Lane-changing analysis and modelling, Traffic state estimation, Microsimulation.

JOURNAL PAPERS

- **Under review:**

Arman, M. A., Tampère, C.M J. (2024). Traffic Flow Crystallization method for trajectory approximation and lane change inference. IEEE Intelligent Transportation Systems Transactions, (*under review*).

Arman, M. A., Tampère, C.M J. (2024). A multi-class macroscopic lane-change prediction model for weaving areas. Transportation Research Part C-Emerging Technologies. (*under review*).

Wens, M., **Arman, M. A.**, Tampère, C., Vansteenwegen, P. (2024). Strategic Lane Changing Behaviour in a Multi-Class, Complex Highway Setting. European Journal of Operational Research. (*under review*).

Notelaers, L., **Arman, M. A.**, Tampère, C.M J. (2024). A Stated Preferences Analysis of Shared Automated Vehicles as a Complementary Semi-Public Mode. Transportation Research Part A: Policy and Practice. (*under review*).

- **Published:**

- Arman, M. A.**, Tampère, C.M J. (2023). Empirical Study of Lane-Changing Maneuvers in a Weaving Area Based on Reconstructed Trajectories of Floating Car Data. Transportation Research Record (TRR), Journal of the Transportation Research Board, doi: 10.1177/03611981231179474.
- Arman, M. A.**, Tampère, C.M J. (2022). Lane-level trajectory reconstruction based on data-fusion. Transportation Research Part C-Emerging Technologies, 145, Art.No. 103906. doi: 10.1016/j.trc.2022.103906.
- Arman, M. A.**, Tampère, C.M J. (2021). Lane-level routable digital map reconstruction for motorway networks using low-precision GPS data. Transportation Research Part C-Emerging Technologies, 129, Art.No. 103234. doi: 10.1016/j.trc.2021.103234.
- Arman, M. A.**, Khademi, N., and de Lapparent, M. (2018). Women's mode and trip structure choices in daily activity-travel: a developing country perspective. Transportation Planning and Technology, 41 (8), 845-877. doi: 10.1080/03081060.2018.1526931.
- Arman, M. A.**, N. Kalantari. and Mohammadian, A. (2015) Joint Modelling of Household Vehicle and Activity Allocation: Statistical analysis and discrete choice modelling approach. Transportation Research Record (TRR), Journal of the Transportation Research Board, No. 2495 on pages 121-130, doi: 10.3141/2495-13.
- Zargari, S. A., **Arman, M. A.**, and Kalantari, N. (2013). An Ant Colony System Algorithm for the Time Dependent Network Design Problem. International Journal of Optimization in Civil Engineering, 3(4), p. 511-526.

PEER REVIEWED CONFERENCE PAPERS

- Notelaers, L., **Arman, M. A.**, Tampère, C.M J. (2024). Stated Preferences on Shared Automated Vehicles in the Context of Mode Choice Model Estimation for Different Trip Purposes A Case Study for Flanders, Belgium. In: Transportation Research Board 103rd Annual Meeting, Washington DC, USA.
- Rezaie, N., **Arman, M. A.**, van der Heide, A., Tampère, C.M J. (2024). Trajectory Reconstruction Using Reinforcement Learning. In: Transportation Research Board 103rd Annual Meeting, Washington DC, USA.
- Rafe, A., **Arman, M. A.**, Singleton, P. A. (2024). An In-depth Investigation into Factors Influencing Pedestrian Crash Severity: Comparative Analysis of Ordered Probit, Stacking Ensemble Model, and TabNet. In: Transportation Research Board 103rd Annual Meeting, Washington DC, USA.
- Arman, M. A.***, Tampère, C.M J. (2023). Accurate Segment Travel Time Estimation Based on Individual Vehicle Data. Presented at 26th IEEE International Conference on Intelligent Transportation Systems (IEEE-ITSC-2023), Bilbao, Bizkaia, Spain, 24-28 Sep 2023.
- Arman, M. A.***, Tampère, C.M J. (2023). Trajectory Approximation of the Full Traffic Flow Based on Double Loop Detector Data. In: Traffic Flow Theory and Characteristics Committee Summer meeting (ACP50). Presented at TFTC-2023, Amsterdam, The Netherlands, 26-28 Jul 2023.
- Arman, M. A.**, Himpe, W., Tampère, C.M J. (2023). Trajectory Approximation of the Full Traffic Flow Based on Double Loop Detector Data. In: TRB committee ACP80 Standing

- Committee on Traffic Simulation, (Paper No. 23-02527). Presented at the Transportation Research Board 102nd Annual Meeting, Washington DC, USA, 08 Jan 2023-12 Jan 2023.
- Arman, M. A.**, Tampère, C.M J. (2023). An Empirical Study of Lane-Changing Maneuvers in a Weaving Area Based on High Resolution Floating Car Data. In: TRB committee ACP50 Standing Committee on Traffic Flow Theory and Characteristics, (Paper No. 23-00488). Presented at the Transportation Research Board 102nd Annual Meeting, Washington DC, USA, 08 Jan 2023-12 Jan 2023.
- Wens, M., **Arman, M. A.**, Abuamer, I. M A., Tampère, C., Vansteenwegen, P. (2023). Differences in Optimised Trajectories Under Selfish and collaborative Behaviour of multi-class Freeway Traffic. Presented at International Conference on Models and Technologies for Intelligent Transportation Systems (MT-ITS 2023), Nice, France, 14-16 June 2023, doi: 10.1109/MT-ITS56129.2023.10241634.
- Wens, M., **Arman, M. A.**, Abuamer, I. M A., Tampère, C., Vansteenwegen, P. (2022). Optimising highway vehicle trajectories with a MILP; case study on the ring of Antwerp. (40-41). Presented at the 36th Annual Conference of the Belgian Operations Research Society (ORBEL), Gent, Belgium, 12 Sep 2022-13 Sep 2022.
- Arman, M. A.***, Tampère, C.M J. (2022). Empirical Analysis of Lane Changing Maneuvers in Motorway Weaving Area. In: hEART 2022. Presented at the hEART 2022: 10th Symposium of the European Association for Research in Transportation, KU Leuven, Leuven, Belgium.
- Arman, M. A.**, Tampère, C.M J. (2020). Road centreline and lane reconstruction from pervasive GPS tracking on motorways. Presented at the 11th International Conference on Ambient Systems, Networks and Technologies (ANT) / 3rd International Conference on Emerging Data and Industry 4.0 (EDI), Warsaw, Poland, 06 Apr 2020-09 Apr 2020. doi: 10.1016/j.procs.2020.03.086.
- Arman, M. A.**, Khademi, N., de Lapparent, M., Saedi, R. (2019). Activity-Travel Analysis of Women in a Patriarchal Society with Strong Gender Norms. In: Women's Issues in Transportation, (Paper No. 19-00821). Presented at the Transportation Research Board 98th Annual Meeting, Washington DC, United States, 13 Jan 2019-17 Jan 2019.
- Arman, M. A.**, Rafe, A. & Kretz, T. (2015) Pedestrian Gap Acceptance Behaviour, A Case Study: Tehran. In: TRB committee ANF10 Pedestrians., (Paper No. 15-2217). Presented at the Transportation Research Board 94th Annual Meeting, Washington DC, United States, 11 Jan 2015-15 Jan 2015.
- Arman, M. A.*** & Kalantari, N. (2014). Joint Modelling of Shopping Mode and Destination Choice - Case Study of Mashhad. In 13th International Conference of Traffic and Transportation Engineering, Tehran, Iran.
- Arman, M. A.**, Kalantari, N. (2013). Statistical and Analytical Modelling of Children's Travel Behaviour: Some Evidence on the Cultural Effects. In: TRB committee ADB10 Traveller Behaviour and Values, (Paper No. 13-3669). Presented at the Transportation Research Board 92nd Annual Meeting, Washington DC, United States, 13 Jan 2013-17 Jan 2013.
- Mohaymany, A. S., **Arman, M. A.***, & Kalantari N. (2013). Estimation of the distribution function of vehicles' headway in different traffic facilities of Tehran. In: The 12th International Conference on Transportation and Traffic Engineering, Tehran, Iran.

Zargari, S. A., Arman, M. A.*, & Kalantari N. (2012). Time-Dependent Transportation Network Design Considering Land-Use and Equity Issue between Landowners. In the 9th International Congress on Civil Engineering, Isfahan, Iran.

*: The papers I presented are highlighted with an asterisk next to my name.

ACADEMIC BOOKS

Simulation, Calibration and Validation with Aimsun, Publisher: Avaye Fahim, 2011, ISBN: 978-600-6810-12-6 (in Persian, author of 3 out of 6 chapters).
Manual of using Traffic Simulation Software in Tehran, Publisher: Avaye Fahim, 2011, ISBN: 978-600-6810-13-3 (in Persian, author of 2 out of 5 chapters).
Pedestrian Flow Modelling and Simulation in Tehran, Publisher: Department of Transportation and Traffic Organization of Tehran Municipality, 2013 (in Persian, author of 3 out of 8 chapters).

ACADEMIC CERTIFICATES

Teacher Training Faculty of Engineering Science, 2021, SWEET², KU Leuven.
Central Lecture Research Integrity, 14 January 2021, KU Leuven.
Discrete Choice Analysis: Predicting Demand and Market Shares, 20-24 March 2016, Transport and Mobility Laboratory, EPFL, Switzerland.

TEACHING ACTIVITIES

Transportation Systems Analysis (B-KUL-H0A07A) (2023, one semester), Basic discrete choice analysis module, 3 sessions teaching + 3 sessions exercise per semester, KU Leuven.
Transport Models (B-KUL-H0T95A) (2020-2023, three semesters), Advanced discrete choice analysis module, 3 sessions teaching + 3 sessions exercise per semester, KU Leuven.
Intelligent Transportation Systems (B-KUL-H00M8B) (2020-2023, four semesters), 13 exercise sessions per semester, KU Leuven.
Traffic Engineering (B-KUL-H0A07A) (2020-2022, three semesters), Basic discrete choice analysis module, 3 sessions teaching + 3 sessions exercise per semester, KU Leuven.
Supply Chain Engineering (B-KUL-H08J0A) (2020-2023, four semesters), 3 exercise sessions per semester, KU Leuven.
Statistics and Probability in Transportation Engineering (2012-2015, four semesters), 6 exercise sessions per semester, Iran University of Science and Technology.
Computer Application in Transportation Supply and Demand Modelling (focusing on micros and macro simulation), (2017-2018, five workshops over a two-year period), 16 hours per workshop, University of Tehran.

RESEARCH MENTORING

For postgraduate students Gwynne van Kaauwen (2020-2021), Master's Thesis Title: Multi-objective optimization for traffic signal control.
For postgraduate students Lotte Notelaers (2020-2021), Master's Thesis Title: Shared Automated Vehicle Services in Multimodal Network Simulation.

For postgraduate students Maarten Wens (2021-2022), Master's Thesis Title: Unravelling Interlocking Vehicle Trajectories Towards Antwerp's Largest Bottleneck.
For postgraduate students Nikzad Rezaie (2022-2023), Master's Thesis Title: Trajectory Reconstruction Using Reinforcement Learning.

SERVICES

Reviewing for Scholarly Journals:

- IEEE Intelligent Transportation Systems Transactions
- Data Science for Transportation

Reviewing for International Conferences:

- Transportation Research Board (TRB)
- IEEE International Conference on Intelligent Transportation Systems (IEEE-ITSC)
- Symposium of the European Association for Research in Transportation (hEART)

Conference Program Committees:

- hEART-2022
- BIVEC-GIBET-2023

LANGUAGE PROFICIENCY

English (C1: Proficient user - Advanced)

COMPUTER SKILLS

Python Programming
Machine Learning Programming (PyTorch)
R Programming
PTV Software package (Vissim, Viswalk, Visum)
TSS-Aimsun
SUMO (Open-source Simulation of Urban Mobility)
QGIS

REFEREES

Professor. Dr. Eng. Chris Tampère

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