

Elahe Sherafat

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Education

- Doctor of Philosophy in Civil Engineering - Transportation
 - January 2022
 - Ryerson University, Toronto, Canada
 - supervisor: [Dr. Bilal Farooq](#)
- Master of Science in Transportation Engineering
 - Sep 2018-Dec 2020
 - Tarbiat Modates University, Tehran-Iran
 - Rank: [235 in engineering according to U.S.News](#)
 - Thesis title: **Application of deep learning algorithms to forecast traffic parameters in rural roads**
 - supervisor: [Dr. Seyedehsan Seyedabrishami](#)
 - **GPA: 4.0/4.0**
 - **Rank: 1st in class**
- Bachelor of Science in civil engineering
 - Sep 2009 - Sep 2015
 - Yazd university, Yazd-Iran
 - Thesis title: Weld defect detection methods in steel structures
 - Supervisor: [Dr. Hossenali Rahimi bondarabadi](#)

Publications

- Bilal Farooq, **Elahe Sherafat**, Esemble Deep Neural Network for Multi-variate traffic flow prediction, in prep
- Arash Rasaizadi, **Elahe Sherafat**, SeyedEhsan Seyedabrishami - [short-term prediction of traffic state, statistical approach versus machine learning approach](#), published in the Journal of Scientia Iranica - July 2021.
- Amirhosein Karbasi, **Elahe Sherafat**, [short-term prediction of traffic flow based on gated recurrent unit neural networks](#), published in National Conference on New Studies and Findings in the Field of Civil Engineering, Architecture and Urban Planning in Iran - Des 2021.
- **Elahe Sherafat**, Arash Rasaizadi, SeyedEhsan Seyedabrishami - [Short-term prediction of traffic state of suburban roads, statistical approach versus machine learning approach](#), the 18th international conference on traffic and transportation engineering, candidate of the best article, 2020.
- Arash Rasaizadi, **Elahe Sherafat**, SeyedEhsan Seyedabrishami - [Short term prediction of traffic state of suburban roads using big data driven from intelligent transportation system](#), ¹st smart Tehran congress 2019.
- Corinna Matzka, Michael Reiter, Arash Rasaizadi, Sahar Samavati, **Elahe Sherafat**, Renata Sofric, Mir Hojat Seyyed Valiloo, Barbara Laa, Tadej Brezina - Quantifying pedestrian retrofit measures of caroriented settlements, The case of Pardis new town phase 11, Journal of Urban Regeneration and Renewal 2018.

Working Experiences

- Researcher at Laboratory of Inovation in Transportation LiTrans - Toronto - Canada
- Researcher of **traffic state prediction in rural roads**, Iran Road Maintenance & Transportation Organization, Tehran-Iran, Aug 2020-Feb 2021.
- Structural engineer, Kamran construction company, Yazd-Iran, June2017-June2018.

Teaching Experiences

- **Teacher assistant** of **Python** at Tarbiat Modares University, Sep 2019-Jan 2021.
- **Teacher assistant** of **Operation Research** at Tarbiat Modares University, Sep 2019-Jan 2021.

Research Interests

Artificial intelligence, Reinforcement Learning, Big data analysis, Traffic state estimation, Deep learning, ITS, Convolutional neural networks, Recurrent neural networks, Time series forecasting

Skills

- **Programming languages:** Python, R
- **Software:** Stata, Nlogit, Visum, python Biogeme
- **Models:**
 - Deep learning algorithm(MLP, CNNs, RNNs, GANs)
 - Time series models (SARIMA model)
 - Four step assignment, discrete choice models(logit)
- **Language**
 - Persian (native)
 - English (band score 7 in IELTS exam)
 - French (beginner)

Academic projects

- **Reinforcement Learning**
 1. Attention Learn to solve Routing Problem
- **Urban Transport System**
 1. Connected and Automated Vehicle (CAV) simulation in mixed traffic situation
- **Econometrics project**
 1. Traffic flow prediction with regression model using R programming language
 2. Short-term traffic flow prediction using seasonal ARIMA model with stata
 3. Mode choice model using python biogeme
- **AI, neural networks & deep learning projects**
 1. Computer vision project- traffic sign classification using CNNs with German Traffic Sign Recognition Benchmark data
 2. Air pollution prediction using pollution data set from Beijing-china using recurrent neural networks (LSTM-GRU-RNN)
 3. Applying different kind of generative adversarial networks(GANs) on cifar10 data set
 4. House sales prediction using MLP
 5. Fashion- mnist classification using MLP
 6. Dimensionality Reduction of fashion mnist using PCA, cascaded RBM and auto encoders
- **System analysis-traffic assignment projects**
 - 4 Steps traffic assignment projects
- **Demand analysis**
 - Mode choice model using Nlogit

Seminars, Webinars and Workshops

- Gordie Howe International Bridge Smart Infrastructure Faceoff, Presented by AVIN and WDBA, June 2021
- Transportation Data Analysis Infrastructure Development Strategies, August 2020, Tehran, Iran
- 3rd Smart Tehran congress 2019, December 2019, Tehran, Iran
- Application of R programming language in transportation planning, November 2019,Tehran, Iran
- Technical university of Wien & Tarbiat Modares University mutual transportation planning seminar and workshop, April2019, Tehran, Iran

Honors & Awards

- Top fifth of **Deep Learning** class of 120
- Tuition waiver in Master's program
- **Ranked first** among all **Masters students** of **Transportation engineering**

Hobbies

- Music: Piano
- Sports: Roller skating, Cycling, Fitness

References

- [Professor. Bilal Farooq](#)(Associate Professor of Transportation Engineering
- **Ryerson University, Toronto-Canada**
- email: bilal.farooq@ryerson.ca
- [Dr. Seyedehsan Seyedabrishami](#) (Assistant Professor of Transportation Engineering)
 - **Tarbiat Modares University**, Tehran-Iran
 - Email: seyedabrishami@modares.ac.ir
- [Dr. Ahmad Kalhor](#)(Assistant Professor of Electronic and Communications Engineering)
 - **University of Tehran**, Tehran-Iran
 - Email: akalhor@ut.ac.ir
- [Mr. Tadej Brezina](#), MSc (Senior Scientists)
 - **Vienna University of Technology, Institute of Transportation**, Vienna-Austria
 - Email: tadej.brezina@tuwien.ac.at