

M.MASOUD RAHIMI, PhD Candidate

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SUMMARY

Known as: a self-motivated, self-starter, team player, highly passionate, hardworking and fast learner; strive to consistently exceed expectations. Effectively handle concurrent multiple assignments, Excellent problem solver and troubleshooting skills.

Research Interest: Broadly interested in developing various tools and approaches to support the discovery of novel applications in geospatial data science. My PhD research is focused on employing natural language processing and machine-learning technologies to enable constant monitoring of physical infrastructure in the context of public transport.

About me: Masoud is a final-year PhD candidate at the Faculty of Engineering & IT at the University of Melbourne, expecting to finish by April 2022. Working within diverse industrial and academic environments, he has gained a wealth of technical and analytical expertise as well as teaching and academic skills. This has consolidated his understanding of a range of data science methods and techniques, including Natural Language Processing (e.g. Word2vec, Elmo and BERT) and deep learning approaches (e.g. RNNs), as well as various programming languages (such as Java, C#, Python, R and Matlab), big data handling and their corresponding data validation methods. He also has a demonstrated background in university teaching and student co-supervision.

EDUCATION

Doctor of Philosophy (PhD) in Spatial Information

Faculty of Engineering & IT, University of Melbourne

Nov 2018 –

Current

Thesis title: Toward a real-time service quality indicator for transport nodes

Supervisors: Prof Stephan Winter, Prof Mark Stevenson, Dr Elham Naghizade

Master of Science (MSc) in Geospatial Information Systems (GIS)

School of Surveying and Geospatial Engineering, The University of Tehran, Iran.

Sep 2014 –

Sep 2017

Thesis title: A framework for spatial analysis in traffic management based on cloud computing

Bachelor of Science (BSc) in Geomatics Engineering

Iran University of Science and Technology, Iran

Sep 2009 –

Sep 2013

TECHNICAL SKILLS

- **Programming/Languages:** Python, R, MATLAB, .Net Framework, C#, PL/SQL, JavaScript (ES6) & JQuery
 - **.Net Technologies:** ASP.NET MVC, Windows Forms, Entity Framework (ORM), Kendo UI
 - **Natural Language Processing:** Language models (BERT), Text classification (LDA), toponym resolutions, Aspect-based sentiment analysis
 - **Machine learning:** Torch,
 - **Spatial Analysis:** ESRI, QGIS,
 - **Databases:** PostgreSQL, Oracle, SQL Server,
 - **Parallel processing:** Hadoop MapReduce,
 - **Computer Assisted Design:** AutoCAD,
 - **Source Code Control:** GIT
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WORK EXPERIENCE (ACADEMY/INDUSTRY)

Postgraduate Researcher

Faculty of Engineering & IT, University of Melbourne

Nov 2018 –

Current

- Using spatial data mining, Natural Language Processing (NLP) and spatial statistics to monitor provided service quality in public transportation.
- Employed various machine learning approaches, sentiment analysis methods, word embedding and language models (such as BERT) as well as different spatial analyses to mathematically model passengers' perception toward built environments such as public transport nodes.
- Developed tools to automatically localize pedestrians using CCTV footage of physical infrastructure.
- Developed a Hawkes Point Process-based model to predict the future occurrences of events over a public transport network

Spatial Software Developer (Full Time)

TFR consultants, Tehran, Iran

Sep 2015 –

Nov 2018

Main responsibilities:

- Spatial software development (Web and Desktop) using .NET (C# and ASP.NET MVC) and MSSQL.
- Cooperated with electrical engineers for designing and operating an AVL system for fleet management.
- Developing a wrapper software to facilitate the connection between a GPS module, an existing C++ NMEA listener and a C# controller.
- Cooperating in the design and development of the evaluation process of spatial information systems.
- Developing a spatial platform for Iran Roads Management Center to assess the performance of current constructors and compare their performance on a real-time basis.
- Performing research and giving professional contributions and feedbacks to improve the outcome of corresponding teams
- Managing geodatabases and feature datasets
- Preparing comprehensive reports of the progress of the work for the customer
- Supervising a team of 5 technicians for editing and creating features on different maps
- Creating value for internal customers through the delivery of spatial technologies and data post-processing capabilities
- Producing georeferenced imagery and maps, and digitized new features upon request using AutoCAD and ArcGIS

Main achievements:

- Successfully supervised a teamwork project for editing and creating spatial features
- Showed problem-solving and strategic-thinking capabilities and providing innovative solutions
- Improved spatial skills by integrating spatial and programming skills

- Contributing to the management team by providing constructive feedbacks
- Demonstrated analytical and conceptual skills to deal with complex tasks concurrently with minimum supervision
- Learned to work with technology under heavy pressure where the image of a medium-sized company relies on your design and administration 24/7.

HONORS AND AWARDS

- Australian Global Talent Visa to work and live permanently in Australia. 2021
- Surveying & Spatial Sciences Institute (SSSI) Travel Grant to attend Locate 2020 conference. 2020
- Newman College Academic Scholarship to undertake the Doctor of Philosophy in Engineering at The University of Melbourne, Australia. 2019
- Melbourne Research Scholarship (MRS) to undertake the Doctor of Philosophy in Engineering at The University of Melbourne, Australia. 2018
- Melbourne School of Engineering Studentship to undertake the Doctor of Philosophy in Engineering at The University of Melbourne, Australia 2018
- Best Scientific Journal in nationwide student committees' competitions (Harekat Fest), Iran. 2015
- Best Scientific Website in nationwide student committees' competitions (Harekat Fest), Iran. 2015
- Rank 14th among 2519 applicants in the nationwide Master of Science entrance exam. 2014
- Iranian Science and Research Scholarship for Bachelor of Science (Tuition waiver). 2009

SELECTED PUBLICATIONS (Complete list at [Google Scholar Profile](#))

- **Rahimi, M.M.**, Naghizade E., Stevenson M. and Winter S., "SentHawkes: A Sentiment-aware Hawkes Point Process to Model Service Quality of Public Transport using Twitter Data", Transportation Research Part C: Emerging Technologies (Second round of revision).
 - **Rahimi, M.M.**, Khoshelham K., Stevenson M. and Winter S., "Pose-Aware Monocular Localization of Occluded Pedestrians In 3D Scene Space", ISPRS Open Journal of Photogrammetry and Remote Sensing, Vol 2 (2021) Doi: <https://doi.org/10.1016/j.ophoto.2021.100006>.
 - **Rahimi, M.M.**, Naghizade E., Stevenson M. and Winter S., "Service quality monitoring in confined spaces through mining Twitter data", Journal of Spatial Information Science (JOSIS), Number 20 (2020). Doi: 10.5311/JOSIS.2020.20.603.
 - **Rahimi, M.M.**, Naghizade E., Stevenson M. and Winter S., "The Effectiveness of Sentiment Analysis for Detecting Fine-grained Service Quality", Geocomputation conference'19, Queenstown, New Zealand. <https://minerva-access.unimelb.edu.au/handle/11343/233272>
 - **Rahimi, M.M.**, Hakimpour F., "Towards a Cloud-based Smart Traffic Management Framework", International Society for Photogrammetry and Remote Sensing (ISPRS) Joint Conference'17, Tehran, Iran. <https://doi.org/10.5194/isprs-archives-XLII-4-W4-447-2017>
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ACADEMIC ACTIVITIES

Teaching (Tutor, Demonstrator, Guest Lecturer)

University of Melbourne

- Tutor, graduate-level, Foundations of Spatial Information (2019 – Current)
- Tutor, undergraduate-level, Elements of Data Processing (at Newman College) (2021)
- Guest lecturer of a graduate subject, Spatial Information Programming (May 2020)
- Tutor, graduate-level, Satellite Positioning Systems (2019 – 2020)

Student Co-Supervisor

Melbourne School of Engineering, University of Melbourne

- Miguel Rosas Raya (2020-2021): “Prediction of Transit-Induced Gentrification with Machine Learning in Melbourne” (MCS)
- Andre Andre (2019): “Analysing People’s Perception towards Melbourne’s White Night Festival through Sentiment Analysis on Twitter Dataset” (MIT (Computing))
- Xiaoxue Wang (2019): “Predicting Urban Space Types Based on Sentiment Analysis - A Spatio-temporal Research in Melbourne” (MIT (Spatial))

Manuscripts Sub-reviewer

- ACM International Conference on Information and Knowledge Management (CIKM 2020)
- Transactions in GIS (2019)
- ACM SIGSpatial (2019)
- 17th International Symposium on Web and Wireless Geographical Information Systems (W2GIS 2019)

Other Voluntary Experiences

- Mentoring first-year bachelor students at Newman College, Australia (2019 – 2020).
- President of the union of academic committees, Iran University of Science and Technology (2012-2013).
- President of the Geomatics academic committee, Iran University of Science and Technology (2011-2013).