Ruhollah **Taghizadeh**

Postdoc Researcher

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About me

My primary research interest is in **Pedometrics** with a particular focus on **Digital Soil Mapping**. The core of the pedometric approach integrates soil system knowledge with **Machine Learning**, advanced statistical methods, **Geospatial Data Analysis**, and **Remote Sensing**. I apply the most recent technology in spatial data analysis to model and predict various environmental metrics such as soils, water, vegetation, and climate.

Experience

Department of Geosciences, University of Tübingen, Germany 2017-Present
Postdoc Researcher

Department of Plant Science, South Dakota State University, USA 2016
Postdoc Researcher *(three months)*

Faculty of Agriculture, Ardakan University, Iran 2013-2017
Assistant Professor

Department of Soil and Water, Agricultural Research Center, Iran 2010-2011
Geospatial Consultant

Education

Faculty of Agricultural Engineering and Technology, University of Tehran, Iran 2012
Doctor of Philosophy in Agricultural Engineering-Soil Science

Sydney Institute of Agriculture, The University of Sydney, Australia 2012
Postgraduate Visiting Scholar in Digital Soil Mapping *(six months)*

Faculty of Agricultural Engineering and Technology, University of Tehran, Iran 2008
Master of Science in Agricultural Engineering-Soil Science

Faculty of Agriculture, SB University of Kerman, Iran 2005
Bachelor of Science in Agricultural Engineering-Soil Science

Projects

German Research Foundation 2022
Sensitivity and Response of Himalayan Timberline Ecotones to Global Warming *(Collaborator)*

German Research Foundation 2020
Transferability of Machine Learning for Soil Mapping *(Collaborator)*

Iranian Agricultural Research, Education & Extension Organization 2019
Digital Soil Mapping in Kurdistan *(Collaborator)*

Alexander von Humboldt Foundation 2017
Digital Soil Mapping with Limited Data *(Principal Investigator)*

Research Interests

Pedology; Digital Soil Mapping, Remote and Proximal Sensing, Geographic Information System, Geospatial Data Analysis, Machine Learning, Statistical Inference, Soil Health, Climate Change, Precision Agriculture

Teaching

Teaching Assistant at University of Tübingen, Germany 2020-Present
- Spatial Pedology and Geomorphology GS
- Statistics UGS

Workshop Lecturer
- An introduction to Spatial Analysis in QGIS, University of Tübingen *(two hours-online)* 2022
- An introduction to GIS, University of Tübingen *(two hours-online)* 2022
- Spatial Data Analysis in R, Iranian Soil & Water Research Institute *(seven days-online)* 2021
- Digital Soil Mapping in R, Iranian Soil & Water Research Institute *(two days)* 2016
- Data Mining in Soil Sciences, Iranian Soil & Water Research Institute *(two days)* 2016

Fellowships, Honors, Awards

Five Nominated Pedometrics Best Paper 2020
Alexander von Humboldt Postdoctoral Fellowship 2017
Lecturer Award at Ardakan University 2017

Professional Services

Award Committee Member of the Pedometrics Commission 2022-Present
Executive Board Member of International Soil Modeling Consortium 2022-Present
Associate Editor of Frontiers in Soil Science/Pedometrics 2022-Present
Webmaster of Pedometrics Homepage 2022-Present

Professional Training

Open Source Solutions for Earth System Data, OpenGeoHub 2022
Oxford Machine Learning Summer School, AI for Global Goals 2022
Science Communication, University of Tübingen 2022
Agile Project Management for Research, University of Tübingen 2022
Spatial Sampling, Wageningen University & Research 2021
Leading Virtual Teams, University of Tübingen 2021
Uncertainty Propagation in Spatial Modelling, Wageningen University & Research 2020
Geostatistics, Wageningen University & Research 2019
GEOSTAT Summer School, OpenGeoHub 2018
Digital Soil Mapping, ISRIC 2018
Digital Soil Mapping with R, The University of Sydney 2012

Technical Skills

Programming
- R ★★★★☆
- R Markdown ★★☆☆☆
- Python ★☆☆☆☆

Spatial Data Analysis
- QGIS ★★★★★
- ArcMap ★★★★★
- SAGA GIS ★★★★★
- Google Earth Engine ★★★☆☆

Office
- Word, Excel, PowerPoint ★★★★★

Soil Science
- Digital Soil mapping ★★★★★
- Soil Chemical and Physical Analysis ★★★★★
- Soil Mineralogical and Micromorphological Analysis ★★★★☆
- Description, Classification and Interpretation of Soils in the Field ★★★★☆

Field Work

Soil Sampling, Soil Survey, Geophysical Surveys, Soil Erosion Surveys	Iran
Soil Sampling, Soil Survey, Land Evaluation	Kenya
Soil Sampling	USA

Research Impacts

Publications

Peer Reviewed Journals	85
- *First Author*	21
- *Co-First Author*	3
- *Last Author*	17
- *Corresponding Author*	25
Book Chapters	3
Book Editor *(in Persian)*	1
Presentations	17

H-Index

Google Scholar	28
Scopus	25
Web of Science	24

Citation

Google Scholar	2692
Scopus	2006
Web of Science	1769

Publications

SELECTED PAPERS (* INDICATES CORRESPONDING AUTHOR)

1. **Taghizadeh-Mehrjardi, R.***; Sheikhpour, R.; Zeraatpisheh, M.; Amirian-Chakan, A.; Toomanian, N.; Kerry, R.; Scholten, T. *Semi-Supervised Learning for the Spatial Extrapolation of Soil Information*. Geoderma 2022, 426, 116094, doi:10.1016/j.geoderma.2022.116094.
2. **Taghizadeh-Mehrjardi, R.***; Schmidt, K.; Toomanian, N.; Heung, B.; Behrens, T.; Mosavi, A.; S. Band, S.; Amirian-Chakan, A.; Fathabadi, A.; Scholten, T. *Improving the Spatial Prediction of Soil Salinity in Arid Regions Using Wavelet Transformation and Support Vector Regression Models*. Geoderma 2021, 383, 114793, doi:10.1016/j.geoderma.2020.114793.
3. **Taghizadeh-Mehrjardi, R.**; Hamzehpour, N.; Hassanzadeh, M.; Heung, B.; Ghebleh Goydaragh, M.; Schmidt, K.; Scholten, T. *Enhancing the Accuracy of Machine Learning Models Using the Super Learner Technique in Digital Soil Mapping*. Geoderma 2021, 399, 115108, doi:10.1016/j.geoderma.2021.115108.
4. **Taghizadeh-Mehrjardi, R.***; Mahdianpari, M.; Mohammadimanesh, F.; Behrens, T.; Toomanian, N.; Scholten, T.; Schmidt, K. *Multi-Task Convolutional Neural Networks Outperformed Random Forest for Mapping Soil Particle Size Fractions in Central Iran*. Geoderma 2020, 376, 114552, doi:10.1016/j.geoderma.2020.114552.
5. **Taghizadeh-Mehrjardi, R.***; Nabiollahi, K.; Minasny, B.; Triantafilis, J. *Comparing Data Mining Classifiers to Predict Spatial Distribution of USDA-Family Soil Groups in Baneh Region, Iran*.Geoderma 2015, 253–254, 67–77, doi:10.1016/j.geoderma.2015.04.008.

All Papers –> Google Scholar and ResearchGate