



# Ruhollah Taghizadeh

POSTDOC RESEARCHER

Department of Geosciences, University of Tübingen

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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

<b>Department of Geosciences, University of Tübingen, Germany</b> Postdoc Researcher	2017-Present
<b>Department of Plant Science, South Dakota State University, USA</b> Postdoc Researcher ( <i>three months</i> )	2016
<b>Faculty of Agriculture, Ardakan University, Iran</b> Assistant Professor	2013-2017
<b>Department of Soil and Water, Agricultural Research Center, Iran</b> Geospatial Consultant	2010-2011

## Education

<b>Faculty of Agricultural Engineering and Technology, University of Tehran, Iran</b> Doctor of Philosophy in Agricultural Engineering-Soil Science	2012
<b>Sydney Institute of Agriculture, The University of Sydney, Australia</b> Postgraduate Visiting Scholar in Digital Soil Mapping ( <i>six months</i> )	2012
<b>Faculty of Agricultural Engineering and Technology, University of Tehran, Iran</b> Master of Science in Agricultural Engineering-Soil Science	2008
<b>Faculty of Agriculture, SB University of Kerman, Iran</b> Bachelor of Science in Agricultural Engineering-Soil Science	2005

## Projects

<b>German Research Foundation</b> Sensitivity and Response of Himalayan Timberline Ecotones to Global Warming ( <i>Collaborator</i> )	2022
<b>German Research Foundation</b> Transferability of Machine Learning for Soil Mapping ( <i>Collaborator</i> )	2020
<b>Iranian Agricultural Research, Education &amp; Extension Organization</b> Digital Soil Mapping in Kurdistan ( <i>Collaborator</i> )	2019
<b>Alexander von Humboldt Foundation</b> Digital Soil Mapping with Limited Data ( <i>Principal Investigator</i> )	2017

## Research Interests

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

## Teaching

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### Teaching Assistant at University of Tübingen, Germany


- Spatial Pedology and Geomorphology
- Statistics

2020-Present

GS

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

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

## Professional Services

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- 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

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- 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

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### 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

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Soil Sampling, Soil Survey, Geophysical Surveys, Soil Erosion Surveys  
Soil Sampling, Soil Survey, Land Evaluation  
Soil Sampling

Iran  
Kenya  
USA

## Research Impacts

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### 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	2745
Scopus	2039
Web of Science	1802

## Publications

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### 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.; Triantafyllis, 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 