Behzad Vahedi

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Education

2024 (expected) **University of Colorado Boulder**
Doctor of Philosphy | Geography (Geographical Information Science)

2020 **University of California Santa Barbara**
Mater of Arts | Geography (Geographical Information Science)

2015 **K.N.Toosi University of Technology**
Master of Science | Geospatial Information Engineering

2012 **K.N.Toosi University of Technology**
Bachelor of Science | Geomatics Engineering

Honors and Awards

Feb. 2022 Outstanding Student Presentation Award from the American Geophysical Union (AGU)

2016 - 2020 Five times recipient of Jack and Laura Dangermond travel scholarship. UCSB

Mar. 2018 Finalist in SAP and ESRI Geospatial Hackathon

Feb. 2013 Best paper in the "21st National Geomatics Conference", National Cartographic Center

Publications

2023 **Partial Label Learning with Focal Loss for Sea Ice Classification**(under review)
Vahedi, B., Lucas, B., Karimzadeh, M.

2023 **CNN Segmentation of Sea Ice in Sentinel-1 SAR** (under review)
Pires de Lima, R., **Vahedi, B.**, Hughes, N., Barret, A., Meier, W., Karimzadeh, M.

2022 **A spatiotemporal machine learning approach to forecasting COVID-19 incidence at the county level in the United States**
Lucas B., **Vahedi. B** Karimzadeh M.
International Journal of Data Science and Analytics.

2021 **Spatiotemporal prediction of COVID-19 cases using inter- and intra-county proxies of human interactions**
Vahedi, B., Karimzadeh, M., & Zoraghein, H.
Nature Communications.

2020 **GIS-based Spatial Modeling of COVID-19 Incidence Rate in the continental U.S.**
Mollalo A., & **Vahedi, B.**, Rivera, KM.
Science of The Total Environment, 138884.

2020 **Artificial Neural Network Modeling of COVID-19 Incidence Rates across the Continental U.S.**
Mollalo A., Rivera, KM., & **Vahedi, B.**
International Journal of Environmental Research and Public Health, 17(12), 4204.

2020 **Predicting The Hotspots Of Age-adjusted Mortality Rates Of Lower Respiratory Infection Across The Continental U.S.: Integration of GIS, Spatial Statistics And Machine Learning**
Mollalo, A., Vahedi, B., Bhattarai, S., Hopkins, L. C., Banik, S., & **Vahedi, B.**
International journal of medical informatics, 142, 104248.

Publications (continued)

2018 **Dramatic Change in North Korea: Instability and Human Flight Propensity**
Coggins, B., Lafia S., & **Vahedi, B.**
North Korean Review, 14(1), 49-70

2016 **Exploring the Notion of Spatial Lenses**
Allen, C., Hervey, T., Lafia, S., Phillips, D. W., **Vahedi, B.**, & Kuhn, W.
in: *International Conference on Geographic Information Science (pp. 259-274)*.
Springer International Publishing

2016 **Question-based spatial computing, A case study**
Vahedi, B., Kuhn, W., & Ballatore, A.
Geospatial Data in a Changing World (pp. 37-50). Springer International Publishing.

2016 **Assessing the Attribute Accuracy of Volunteered Geographic Information**
Vahedi, B., & Alesheikh, A. A.
Journal of Geomatics Science and Technology, 5(3), 49-64.

Conference Presentations

Dec. 2022 **Sea Ice Type Classification using Deep Convolutional Networks and Partial Label Learning**
Invited *American Geophysical Union (AGU) Fall Meeting 2022, Chicago, IL, US.*
Vahedi, B., Lucas, B., Banaei-Kashani, F. , Barrett, A. P., Meier, W. N., Karimzadeh, M.

Dec. 2022 **Semantic Segmentation of Sea Ice Using Multi-scale Spatial Context**
American Geophysical Union (AGU) Fall Meeting 2022, Chicago, IL, US.
Vahedi, B., Pires de Lima, R., Lucas, B., Karimzadeh, M.

Dec. 2021 **A Comparison Of Classic Deep Learning Architectures For Sea Ice Classification From SAR**
American Geophysical Union (AGU) Fall Meeting 2021, New Orleans, LA, US.
Vahedi, B., Lucas, B., Karimzadeh, M., Khalsa, S. J., Meier, W. N., Barrett, A. P., Banaei-Kashani, F.

Dec. 2021 **Sea Ice Type Classification from Sentinel-1 SAR Imagery Using Deep Neural Networks**
American Geophysical Union (AGU) Fall Meeting 2021, New Orleans, LA, US.
Vahedi, B., Lucas, B., Khalsa, S. J., Meier, W. N., Barrett, A. P., Banaei-Kashani, F. , Karimzadeh, M.

Jun. 2021 **Sea Ice Type Classification in The Chukchi Sea Using Deep Learning**
national Science Foundation (NSF) EarthCube Meeting(virtual event).
Vahedi, B., Karimzadeh M.,Khalsa, S. J., Meier, W. M.,Barrett, A. P., Lucas, B., Banaei-Kashani, F.,

Apr. 2018 **Lifting Map Algebra to Fields: A Case Study of Ocean Zinc**
Association of American Geographers (AAG) Annual Meeting, New Orleans, LA, US.
Vahedi, B., Kuhn, W.

Apr. 2017 **Revisiting the Notion of "Continuous Fields"**
Association of American Geographers (AAG) Annual Meeting, Boston, MA, US.
Vahedi, B., Kuhn, W.

Sep. 2016 **Exploring the Notion of Spatial Data Lenses**,
Ninth International Conference on Geographic Information Science, Montreal, Canada.
Allen, C., Hervey, T., Lafia, S., Phillips, D. W., **Vahedi, B.**, & Kuhn, W.

Jun. 2016 **Question Based Spatial Computing**
9th AGILE International Conference on Geographic Information Science,
June 2016, Helsinki, Finland.
Vahedi, B., Kuhn, W., Ballatore, A.

Feb. 2013 **Assessing the quality of Volunteered Geographic Information**
Best Paper 21st National Geomatics Conference, February 2013, Tehran, Iran.
Vahedi, B., Alesheikh, A.A.

Journal Reviewer

- PLOS One
- Scientific Reports
- Atmospheric Research
- International Journal of Digital Earth
- Journal of Geomtics Science and Technology
- Annals of GIS

Professional Experience

Present / **Aug. 2020** — Department of Geography, CU Boulder
Graduate Research and Teaching Assistant

- Spatiotemporal (and time-series) forecasting of COVID-19
- Semantic segmentation and image classification of satellite imagery (use case: Arctic sea ice)
- Designing labs for a spatial data science course (from scratch)

Mar 2020 / **Sep 2015** — Center for Spatial Studies, UC Santa Barbara
Graduate Research and Teaching Assistant

- Spatial Question Answering; NLP on spatial queries
- Big spatial data modelling and analysis
- Designing core computations for spatial computing
- Algebraic specification and functional implementation of spatial core concepts

Teaching Experience

University of Colorado Boulder, Department of Geography

Spring 2022	Advanced Quantitative Methods for Geography (GEOG 5023) | Guofeng Cao
Spring 2022	GIS: Mapping (GEOG 3052) | Sarah Kelly
Fall 2021	GIS: Mapping (GEOG 3052) | Sarah Kelly
Fall 2020	Spatial Data Science (GEOG 4003/5100) | Prof. Morteza Karimzadeh
Fall 2020	Spatial Modeling (GEOG 4203/5203) | Prof. Morteza Karimzadeh

University of California Santa Barbara, Department of Geography

Fall 2019	Introduction to GIScience (GEOG 176A) | Prof. Werner Kuhn
Summer 2019	Land, Water, and Life (GEOG 3B) | Instructor: Brandi Gamelin
Spring 2019	Maps and Spatial Reasoning (GEOG W12) | Prof. Alan Murray
Fall 2018	Introduction to GIScience (GEOG 176A) | Prof. Werner Kuhn
Summer 2018	Introduction to GIScience (GEOG 176A) | Instructor: Rui Zhu
Spring 2018	Maps and Spatial Reasoning (GEOG W12) | Instructor: Kevin Mwenda
Winter 2018	Geography of Surfing (GEOG 20) | Instructor: Cascade Tuholske
Fall 2017	Maps and Spatial Reasoning (GEOG W12) | Prof. Keith Clarke
Fall 2016	Introduction to GIScience (GEOG 176A) | Prof. Werner Kuhn