[Last updated: February 2026]

Pouya Zarbipour-Lakposhteh

Google Scholar | LinkedIn | Personal Website | Email

Research Interests

Uncertainty Quantification; Coastal and Ocean Engineering; Machine Learning and Deep Learning Applications; Remote Sensing; Causal Inference; and Hydrodynamics.

Education

Tarbiat Modares University (TMU), Tehran, Iran — Sep. 2021 – Feb. 2024
M.Sc. in Civil Engineering (Coastal, Port, and Marine Structures) | GPA: 15.03 (out of 20)

- Thesis Title: Probabilistic Evaluation of Effluent Discharge Performance in Desalination. | (Excellent grade 19.25/20; Link)
- Supervisor: Dr. Hassan Akbari

Technical and Vocational University (TVU), Tehran, Iran — Sep. 2015 – Feb. 2020
Associate's Degree and B.Sc. in Civil Engineering (Construction and Execution) | GPA: 14.94 (out of 20)

Achievements and Awards

First-ranked graduate of the Marine Structures Department, Iran — 2023
Awarded for M.Sc. thesis | Department ranked 102nd in the world for civil engineering according to US News.

Governmental Fellowship, Iran — Fall 2021
Awarded for M.Sc. studies | Tarbiat Modares University – Ranked 7th in Iran according to US News.

Governmental Fellowship, Iran — Fall 2015
Awarded for Associate's Degree and B.Sc. studies | Technical and Vocational University

Teaching, Research and Professional Experiences

Graduate Research Assistant (under supervision of Dr. Nikoo) — Jun. 2025 – Present
Sultan Qaboos University, Oman

- Implemented machine learning and deep learning techniques in ocean engineering applications.
- Conducted uncertainty quantification in water engineering.

Supervisor and Executive Engineer, Iran — May. 2024 – Present
Iran Construction Engineering Organization (IRCEO)

- Supervised construction of building structures in compliance with Iran's national building regulations.

Ad Hoc Reviewer

- *Water Research* (Elsevier, IF:12.4, Q1)

Graduate Teaching and Research Assistant (under Prof. Shafieefar and Dr. Akbari) — Sep. 2022 – Jun. 2025
Tarbiat Modares University and Coastal Hyd Lab

- Introduced a new Reliability-Based Design Optimization (RBDO) approach for berm breakwaters with required performance.
- Applied machine learning to predic berm breakwater recession with high accuracy.
- Analyzed time-dependent reliability in coastal structures, particularly breakwaters.
- Served as a teaching assistant for Numerical Methods in Marine Engineering and MIKE Zero software training.
- Served as a teaching assistant for Design of Conventional Marine Structures and GeoStudio/PLAXIS 3D software training.

Technical Expert, Civil Computing Laboratory — Apr. 2023 – Feb. 2024
Tarbiat Modares University

Publications

[J] Zarbipour, P., Nikoo, M. R., Akbari, H., Nazari, R. & Karimi, M. (2026). Bridging Causality and Deep Learning for Harmful Algal Bloom Prediction. *Water Research*, 125492. https://doi.org/10.1016/j.watres.2026.125492

[J] Zarbipour, P., Jamali Rovesht, A., Akbari, H. & Shafieefar, M. (2026). Reliability design of reshaping berm breakwaters based on a Bayesian modification. *Ocean Engineering*. https://doi.org/10.1016/j.oceaneng.2026.124594

[J] Zarbipour, P., Akbari, H., & Nikoo, M. R. (2026). Quantum machine learning for wave overtopping estimation: Integrating with causal inference and uncertainty quantification. *Ocean Engineering*, 343, 123482. https://doi.org/10.1016/j.oceaneng.2025.123482

[J] Zarbipour, P., & Akbari, H. (2024). Reliability design of seawater desalination outfalls based on a novel probabilistic environmental assessment. *Ocean Engineering*, 313, 119465. https://doi.org/10.1016/j.oceaneng.2024.119465

[J] Etri, T., Jamali Rovesht, A., Nikoo, M. R., & **Zarbipour, P.** (2026). Hybrid PINN-UQ Surrogate for Spatial Reconstruction of SWAN Wave Parameters. *Ocean Engineering*,

[J] Zarbipour, P., & Akbari, H. (2026). Reliability Analysis of Different Reshaping Berm Breakwaters: Case study at Chabahar region. *International Journal of Coastal, Offshore and Environmental Engineering*.

[J] Zarbipour, P., & Akbari, H. (2026)**.** Reliability-Based Design Optimization of Berm Breakwaters with Different Reshaping and Dependency Structures. *Manuscript in preparation.*

[J] Jamali Rovesht, A., Shafieefar, M., A., Akbari, H. & **Zarbipour, P.** (2026). Probabilistic Design of Berm Breakwaters Considering Environmental Parameter Correlations. *Applied Ocean Engineering*. Under Review.

[J] Zarbipour, P., Jamali Rovesht, A., Akbari, H. & Shafieefar, M. (2026). Accurate Prediction of Berm Breakwater Recession Using XGBoost-Optuna: Integrating Uncertainty Quantification and Causal Inference. *Applied Ocean Engineering*. Under Review.

[J] Zarbipour, P., Jamali Rovesht, A. & Nikoo, M. R. (2026). Causal-Aware Physics-Informed Neural Surrogate with Aleatoric and Epistemic Uncertainty for Wave Overtopping Prediction.

[J] Zarbipour, P., Akbari, H., Nikoo, M. R. & Kazemi, A. (2026). A Graph Neural Network Transformer Model for Spatio-Temporal Prediction of chlorophyll-a in semi-enclosed Gulfs. *Scientific Reports*. Under Review.

[J] Zarbipour, P., Nasimi, S. & Yazdani, M. (2026). A Novel Machine Learning Framework with Causal Inference for Rapid Soil-Structure Interaction-Based Displacement Prediction in Deeply Embedded High-Rise Buildings. *Engineering Applications of Artificial Intelligence*. Under Review.

[C] Zarbipour, P., & Akbari, H. (2024). Assessment of the Spread of Desalination Plant Effluent Study Area: Saqi Koothar Desalination Plant, Bandar Abbas. 1st International Conference on Blue Economy. Link: https://en.civilica.com/doc/1994723/

Project

Developed Software Tools for Coastal Engineering Applications Dec. 2021 – Present

Tarbiat Modares University and Coastal Hyd Lab

- Developed more than 10 Python-based tools for coastal engineering, including sediment transport and breakwater design calculators. | See Programming and Software section on personal website.
- Programmed and developed the *XGBoost Berm Breakwater Recession Prediction tool*, and *Quantum SVM Wave Overtopping Prediction tool.*

Please visit my personal website **to see other completed projects.**

Skills

Personal Strengths: Excellent communication and interpersonal skills; leadership and teamwork abilities; strong organizational, time, and project management skills.

Specialized Software: UQLab, MIKE Zero, SAP2000, ArcGIS Pro, Google Earth Engine, Delft3D, CORMIX.

Programming Languages: MATLAB, Python, Fortran.

Machine Learning: Supervised learning methods; tools include XGBoost and SVM; familiarity with deep learning frameworks.

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Test Scores

TOEFL iBT — In progress (test scheduled)
Reading, Listening, Writing, Speaking

References

Dr. Hassan Akbari
Associate Professor, Faculty of Civil Engineering
Tarbiat Modares University, Tehran, Iran
Phone: +98 21 8288 3906 | Email

Prof. Seyed Ali Akbar Salehi Neyshabouri
Professor, Faculty of Civil Engineering
Tarbiat Modares University, Tehran, Iran
Phone: +98 21 8288 3316 | Email

Prof. Mehdi Shafieefar
Professor, Faculty of Civil Engineering
Tarbiat Modares University, Tehran, Iran
Phone: +98 21 8288 3318 | Email

Dr. Mohammad Reza Nikoo
Associate Professor, Department of Civil and Architectural Engineering, Sultan Qaboos University, Muscat, Oman
Phone: +968 2414 2543 | Email