




Xurxo Rigueira

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EDUCATION

- 2021 – Now **University of Vigo**
Ph.D. Student in Computer Science advised by Prof. David Olivieri and Prof. Maria Araujo
- 2023 – Now **Arizona State University**
Visiting Ph.D. Student advised by of Prof. Tianfang Xu
- 2018 – 2020 **University of Vigo**
Master of Science in Mining Engineering
- 2014 – 2018 **University of Vigo**
Bachelor of Science in Mining and Energy Engineering
- 2017 – 2018 **California State University, East Bay**
Exchange Student in Environmental Engineering

PUBLICATIONS

- 2024 **[Automatic characterization of block-in-matrix rock outcrops through segmentation algorithms and its application to an archaeo-mining case study](#)**
Andres Cristobal, [Xurxo Rigueira](#), Ignacio Perez-Rey, Xian Estevez-Ventosa, Maria Pazo, Maria Lia Napoli, Brais X. Curras, and Leandro R. Alejano
Geosciences 2024, 14(2), 29
- 2023 **[Computer vision application for improved product traceability in the granite manufacturing industry](#)**
Javier Martinez, [Xurxo Rigueira](#), Maria Araujo, Eduardo Giraldez, and Antonio Recaman
Materiales de Construcción 2023, 73 (351)
- [Impact of artificial intelligence on assessment methods in primary and secondary education: Systematic literature review](#)**
Miguel Martinez, [Xurxo Rigueira](#), Ana Larrañaga, Javier Martinez, Iago Ocaranza, and Denis Kreible
Psicodidactica 2023, 28 (2), 93-103
- [Bayesian machine learning and functional data analysis as a two-fold approach for the study of acid mine drainage events](#)**
[Xurxo Rigueira](#), Maria Pazo, Maria Araujo, Saki Gerassis, and Elvira Bocos
Water 2023, 15 (8), 1553
- 2022 **[Functional data analysis for the detection of outliers and study of the effects of the COVID-19 pandemic on air quality: A case study in Gijón, Spain](#)**
[Xurxo Rigueira](#), Maria Araujo, Javier Martinez, Paulino Garcia, and Iago Ocaranza
Mathematics 2022, 10 (14), 2374
- Under review **[Multivariate functional data analysis v. random forest for anomaly detection in water data](#)**
[Xurxo Rigueira](#), David Olivieri, Maria Araujo, Angeles Saavedra, and Maria Pazo
Under review at Journal of Hydrology
- [Enhancing water quality prediction for fluctuating missing data situations: A dynamic Bayesian network-based processing system](#)**
Maria Pazo, Saki Gerassis, Maria Araujo, Margarida Antunes, [Xurxo Rigueira](#) and Itziar Vadillo
Under review at Science of the Total Environment

In progress

Streamflow forecast with transformers in snow-dominated mountainous karst watersheds

Xurxo Rigueira, Seohye Choi, and Tianfang Xu

Water quality anomaly discovery and explanation with an iterative bootstrapped multiresolution algorithm

Xurxo Rigueira, David Olivieri, Maria Araujo, and Maria Pazo

Hybrid deep learning model for the prediction of anomalies in water data

Xurxo Rigueira, David Olivieri, Maria Araujo, and Maria Pazo

CONFERENCES

- 2023 **Real-time incremental machine learning for anomaly detection and surveillance in water quality**
Xurxo Rigueira, David Olivieri, Maria Araujo Maria Pazo, and Elena Alonso
Water Innovation and Circularity Conference. Athens, Greece, (2023.6)
- 2022 **Computer vision application for improved product traceability in the granite manufacturing industry**
Xurxo Rigueira, Javier Martinez, Maria Araujo, Eduardo Giraldez, and Antonio Recaman
5th International Conference on Production Economics and Project Evaluation. Castelo Branco, Portugal.
(2022.9)
- Multivariate functional data analysis for outlier detection in environmental data**
Xurxo Rigueira, Javier Martinez, Maria Araujo, Maria Pazo, and Javier Taboada
Modelling in Engineering and Human Behaviour. Valencia, Spain. (2022.7)
- Directional outlyingness for the detection of functional outliers in water quality data**
Xurxo Rigueira, Javier Martinez, Maria Araujo, and Eduardo Giraldez
International Congress on Water, Waste, and Energy Management. Rome, Italy. (2022.7)

TEACHING EXPERIENCE

Teaching Assistant

- 2024 **Informatics: Computer Science in Engineering (V09G311V01110)**, University of Vigo
Introductory level course, 120 students (Instructor: Prof. Manuel Pérez Cota)

Outreach speaker

- 2020 – Now **Introduction to Smart Materials**, University of Vigo
25+ Introductory level seminars, 20 students per seminar on average
- 2022 – Now **Introduction to Artificial Intelligence**, University of Vigo
10+ Introductory level seminars, 25 students per seminar on average

HONORS AND AWARDS

- 2022 **Undergraduate Excellence Award for Admitted Ph.D. Students**, University of Vigo
Fulton Fellowship, Arizona State University
- 2020 **Graduated with honors**, Class of 2020, University of Vigo
- 2018 **Salutatorian**, Class of 2018, University of Vigo
- 2017 **International Student Scholarship**, [International Student Exchange Program \(ISEP\)](#)

RESEARCH GRANTS

- 2024 **Spanish Ministry of Science and Innovation** Improving water quality management: dynamic-based machine learning and deep learning solutions ([PID2024](#))
Co-author

2020 **Spanish Ministry of Science and Innovation** Improving water quality management: functional and machine learning solutions ([PID2020-116013RB-I00](#))
Co-author

MENTORING EXPERIENCE

One-on-one mentoring

2024 – Now **Pablo Alonso** (Undergraduate Student at the University of Vigo)
Co-supervised with Maria Pazo
Prediction of malfunction alerts at a machine level for wind power plants with a deep learning approach.

2024 – Now **Javier Dopico** (Undergraduate Student at the University of Vigo)
Co-supervised with Maria Pazo
Imputation of missing values in water data with Bayesian models.

2023 – Now **Antia Vidal** (Undergraduate Student at the University of Vigo)
Co-supervised with Prof. Maria Araujo
Comparison between functional data analysis and machine learning models for the detection of anomalies in air quality data.

INDUSTRY EXPERIENCE

2020 **Industrial and Production Engineer** ([Soltec Ingenieros](#))
Completed 50+ energy audits for shopping centers and finished the renewable energy plan for the town of As Pontes, Spain, which received media coverage by [El Periódico de la Energía](#).

2019 **Engineering Intern** ([Soltec Ingenieros](#))
Helped senior engineers to complete 2+ environmental engineering projects.

PROFESSIONAL SERVICE

Paper reviewing

2022 Mathematical Problems in Engineering

Volunteering

2018 Science Contest Judge for [Mesa USA](#)

REFERENCES

Ph.D. advisor **Professor Maria Araujo**, maraujo@uvigo.es,
Department of Natural Resources and Environmental Engineering, University of Vigo

Ph.D. advisor **Professor David Olivieri**, olivieri@uvigo.es,
Department of Computer Science, University of Vigo

Research advisor **Assistant Professor Tianfang Xu**, tianfang.xu@asu.edu,
School of Sustainable Engineering and the Built Environment, Arizona State University

Collaborator **Dr. Ignacio Perez**, iperez@uvigo.es,
Department of Natural Resources and Environmental Engineering, University of Vigo

Former Advisor **Professor Javier Martinez**, javmartinez@uvigo.es,
Department of Applied Mathematics II, University of Vigo