Dr. Maria Nogal

Faculty of Civil Engineering and Geosciences
Delft University of Technology (Netherlands)
+31 (0) 1527 81829
m.nogal@tudelft.nl

Professional history

Academic and industrial appointments

Since 2019 **Assistant Professor** at Dept of Materials, Mechanics, Management & Design, Faculty of Civil Engineering and Geosciences, TU Delft (Netherlands)

Since 2019 **Adjunct Assistant Professor** at Dept of Civil, Structural & Environmental Engineering, School of Engineering. Trinity College Dublin (Ireland)

2021-2025 **Visiting Lecturer** at the School of Civil Engineering, Faculty of Civil Engineering and Geosciences. University College Dublin (Ireland)

2017-2019 **Assistant Professor in Construction Innovation & Principal Investigator of TrinityHaus**, Dept of Civil, Structural & Environmental Engineering, School of Engineering. Trinity College Dublin (Ireland)

2014-2017 **Research Fellow**, Dept of Civil, Structural & Environmental Engineering, School of Engineering, Trinity College Dublin (Ireland)

2010-2014 **PhD Researcher**, Dept of Applied Mathematics & Computational Science, Faculty of Civil Engineering, University of Cantabria (Spain)

Visiting appointments

2025-11 **Visiting Academic** at the Division of Structural Engineering at Lund University (Sweden)

2024-03 **Visiting Academic** at the School of Civil & Environmental Engineering, University of Technology Sydney (Australia)

2023-2&3 **Guest Professor** at the Institute for Construction and Infrastructure Management. ETHZ (Switzerland)

2016-3&4 **Visiting Research Fellow** at the Dept of Hydraulic Engineering, TU Delft

Education

2010-2012 **PhD in Civil Engineering** on *Mathematical methods for traffic prediction* (Cum Laude), Dept of Applied Mathematics & Computation Sciences. University of Cantabria (Spain)

2009-2010 **MRes in Civil Engineering**, Faculty of Civil Engineering, University of Cantabria

2002-2004 **MSc Civil Engineering**, Faculty of Civil Engineering, University of Cantabria (Spain). Structural Expert

1997-2002 **BSc Civil Engineering**, Faculty of Civil Engineering, University of Cantabria (Spain)

Funding and grants

Competitive grants (PI / Co-PI)

2026-2029 SHIELD: Safety and multi Hazard Identification for resilient European hydrogen infrastructure and Logistics Development. **HORIZON-TMA-MSCA-SE-2024**

2025-2027 ALARM. Acquired social LeArning Risk Management. **Pandemic & Disaster Preparedness Center**

2025 Developing an open interactive book for Agent-based modelling using python. **Open Education Stimulation Fund 2024**

2024-2028 FOURIER: InnOvative ArtiFicial IntelligencE methodologIes for monitoRing and maintaining large-scale complex infrastrUctures and obtaining greener, more Resilient and smart societies. **HORIZON-MSCA-2022**

2024-2027 ResilientHydroTwin: Participatory integrated Digital Twin for adaptive urban resilience to water extremities **NWO. Merian Fund Water Disaster Management 2023**

2024-2027 REGENERATE: Reliable nExt GENERation Actuation sysTEms. **NWO – Next Generation High-Tech Equipment**

2023 Cooking up Open Education Resources for the resilience engineering community. **Open Education Stimulation Fund 2022**

2022-2029 Collaborative Doctoral Partnership on Resilience of built infrastructure to natural and man-made hazards. **European Joint Research Center**

2021 An Exploratory Study on Process Safety and Asset Integrity Management in the Digital Age. **Seed Funding from TU Delft Safety and Security Institute**

2021-2024 JOIN-RISe: Joint development of innovative blended learning in STEM curricula based on SDGs for a resilient, inclusive and sustainable education. **KA220-HED - 2021 (Erasmus+ Program)**

2020-2021 Digital competence support to develop MitC Graphical User Interface and online repository. **TU Delft Digital Competence Centre (DCC)**

Collaborative projects and consortia

2025-2028 REUNATECH: NaTech risk management and resilience of high-tech industries and critical infrastructures across Europe. **HORIZON-MSCA-DN-2024**

2023-2027 APRIORI: Active PRoduct-to-Process LearnIng fOR Improving Critical Components Performance. **HORIZON-MSCA-2021**

2022-2025 Machine Learning Alarm Systems for BIM digital twin bridge maintenance. **Spanish Ministry of Science and Innovation**

2022-2025 Development of low-cost modular sensors for structural system identification of bridges subjected to quasi-static loads. **Spanish Ministry of Science and Innovation**.

2018-2021 Structural models for the efficient infrastructure management: smart BIM models. **Spanish Ministry of Economy and Finance**

2018-2021 Calibration of BIM models using low-cost sensors for energy optimization of buildings. **Spanish Ministry of Economy and Finance**

2016-2017 Expert Judgment Network: Bridging the Gap Between Scientific Uncertainty and Evidence-Based Decision Making. **ISCH COST Action IS1304**

2015-2018 TRUST: Training in Reducing Uncertainty in Structural Safety **MSCA-ITN-2020**

2015-2018 RESILENS: Realising European ReSiliencE for CritIcaL INfraStructure. **H2020-EU.3.7**

2014-2017 RAIN: Risk Analysis of Infrastructure Networks in response to extreme weather. **Seventh Framework Programme (REA)**

2014-2015 BRoWSER: Baselining Road Works Safety on European Roads. **Conference of European Road Directors (CEDR) transnational research programme**

2011-2013 Optimization methods for rail and road traffic networks. **Spanish Ministry of Education and Science**

Publications

Selected peer-reviewed journal articles

Resilience assessment in post-wildfire recovery of road transport networks by dynamic thresholds and characteristic curves. Arango, E.; Nogal, M; Yang, M.; Sousa, H.S.; Matos J.C. and Stewart, M.G. ***Reliability Engineering & System Safety***, Vol. 264, Part B, 111365, 2025.

Prioritizing simulation-based stress tests to assess the resilience of transport systems: a computation-free methodology. Nasrazadani, H.; Nogal, M.; Adey, B. T. and Mitoulis, S.A. ***Journal of Infrastructure Preservation and Resilience***, Vol. 6(16), 2025.

Cost-Informed Risk-based Inspection (CIRBI) for hydrogen systems components: A Novel approach to prevention strategies. Giannini, L.; Reniers, G.; Yang, M.; Nogal, M. and Paltrinieri, N. ***Reliability Engineering & System Safety***, Vol. 260, 111063, 2025.

Wildfire preparedness: optimal measures for strengthening road transport resilience. Arango, E.; Nogal, M; Sousa, H.S.; Matos J.C. and Stewart, M.G. ***International Journal of Disaster Risk Reduction***, Vol. 121, 105371, 2025.

Towards Industry 5.0: A stakeholder analysis to understand the human role in the adoption of a heritage bridge human-centric digital twin framework. Jimenez Rios, A.; Plevris, V. and Nogal, M. ***Structure and Infrastructure Engineering*** , 1-15, 2025.

Dynamic quantitative assessment of service resilience for long-distance energy pipelines under corrosion. Huang, Y.; Qin, G.; Yang, M. and Nogal, M. ***Reliability Engineering and System Safety***, 2025.Vol. 256, 110792

Network-level optimization approach for bridge interventions scheduling. Mendoza, M.; Nogal, M. and Morales-Napoles, O. ***Structure and Infrastructure Engineering***, 2024.1–17

Industry 5.0, Towards an enhanced built cultural heritage conservation. Jimenez Rios, A.; Petrou, M.L.; Ramirez, R.; Plevris, V. and Nogal, M. ***Journal of Building Engineering***, Vol. 96, 110542, 2024.

Enhancing infrastructure resilience in wildfire management to face extreme events: Insights from the Iberian Peninsula. Arango, E.; Jimenez, P.; Nogal, M; Sousa, H.S.; Stewart, M.G. and Matos J.C. ***Climate Risk Management***, Vol. 44, 100595, 2024.

Scaling-up dynamic charging infrastructure: Significant battery cost savings. Liao, X.; Nogal, M.; Tavasszy, L. and Saeednia, M. ***Transportation Research Part D***, Vol. 129, 104128, 2024.

Improving societal resilience through a GIS-based approach to manage road transport networks under wildfires hazards. Arango, E.; Nogal, M; Sousa, H.S.; Stewart, M.G. and Matos J.C. ***Transportation Engineering***, Vol. 15, 100219, 2024.

Extreme-oriented sensitivity analysis using sparse polynomial chaos expansion. Application to train-track-bridge systems. Shang, Y.; Nogal, M.; Teixeira, R. and Wolfert, R. ***Reliability Engineering & System Safety, 109818***, 2024.

Estimating bridge criticality due to extreme traffic loads in large highway networks with the use of probabilistic models. Mendoza, M.; Nogal, M. and Morales-Napoles, O. ***Engineering Structures***, vol 300, 117172, 2024.

GIS-based methodology for road transport networks under wildfire events. Arango, E., Nogal, M., Sousa, H.S., Stewart, M.G. and Matos J.C. ***International Journal of Disaster Risk Reduction***, 2023.

Dynamic thresholds for the resilience assessment of road traffic networks to wildfires. Arango, E., Nogal, M, Yang, M., Sousa, H.S., Stewart, M.G. and Matos J.C. ***Reliability Engineering and System Safety***, 109407, 2023.

Optimal design of rail level crossings and associated transition zones using adaptive surrogate-assisted optimization. Shang, Y.; Nogal. M; Teixeira. R. and Wolfert, R. ***Engineering Structures***, Vol. 282, 115740, 2023.

Multi-region lifetime assessment of reinforced concrete buildings subjected to carbonation and climate change. Bastidas-Arteaga, E.; Gervasio, H.; Rianna, G. and Nogal, M. ***Structures***, Vol. 45 Pp 886-899, 2022.

Dynamic mitigation control for construction project scheduling on-the-run. Kammouh, O.; Nogal, M; Binnekamp, R. and Wolfert, R. ***Automation in Construction***, Vol. 141, 104450, 2022.

Sensitivity method for extreme-based engineering problems. Nogal, M. and Nogal, A. ***Reliability Engineering and System Safety***, 2021, vol. 216, 107997.

Mitigation Controller: an adaptive simulation approach for planning control measures in large construction project. Kammouh, O.; Nogal, M; Binnekamp, R. and Wolfert, R. ***Journal of Construction Engineering and Management - ASCE***, 2021, Vol. 147 (8):04021093.

Systems thinking approach for improving maintenance management of discrete rail assets: a review and future perspectives. Shang, Y.; Nogal. M; Wang. H. and Wolfert, R. ***Structure and Infrastructure Engineering***, 2021, 1-19.

Planning low-error SHM strategy with Constrained Observability Method. Peng, T.; Nogal, M.; Casas, J.R. and Turmo, J. ***Automation in Construction***, 2021, vol. 127, 103707.

Multi-system intervention optimization for interdependent infrastructure. Kammouh, O.; Nogal, M; Binnekamp, R. and Wolfert, R. ***Automation in Construction***, 2021, vol. 127, 103698.

Adaptive approaches in metamodel-based reliability analysis: A review. Teixeira, R.; Nogal, M. and O'Connor, A. ***Structural Safety***, 2021, vol. 89, 102019.

Simulation-based Education involving Online and On-Campus Models in different European Universities. Campos, N.; Nogal, M.; Caliz, C. and Juan, A. A. ***International Journal of Educational Technology in Higher Education***, 17:8, 2020.

Structured expert judgment to understand the intrinsic vulnerability of traffic networks. Nogal, M.; Morales-Napoles O. and O'Connor, A. ***Transportation Research Part A: Policy and Practice***, vol 127, pp. 136–152, 2019.

Probabilistic sensitivity analysis of OWT using a transformed Kullback-Leibler divergence. Teixeira, R.; O'Connor, A. and Nogal, M. ***Structural Safety***, Vol 81, pp. 101860, 2019.

Assessment of road traffic resilience assuming stochastic user behaviour. Nogal, M. and Honfi, D. ***Reliability Engineering & System Safety***, Vol. 185, pp. 72-83, 2019.

Novel probabilistic resilience assessment framework of transportation networks against extreme weather events. Nogal, M.; O'Connor, A.; Martinez-Pastor B. and Caulfield, B. ***ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering***, Vol.3(3), 2017 (04017003).

Resilience of traffic networks: from perturbation to recovery via a dynamic restricted equilibrium model. Nogal, M.; O'Connor, A.; Caulfield, B. and Martinez-Pastor B. ***Reliability Engineering & System Safety***, vol. 156 pp. 84–96, 2016.

Coherent and compatible statistical models in structural analysis. Nogal, M.; Castillo, E.; Calviño A. and O'Connor, A. ***International Journal of Computational Methods***, vol. 13, no. 2, 1640008 (18 pages), Mar. 2016.

Book and chapters

Climate change-related risks and adaptation of interdependent infrastructure systems. In: Climate Adaptation Engineering. Val, D. V., Yurchenko, D., Nogal, M. and O'Connor, A. ***pp. 207-242, Butterworth-Heinemann, Elsevier***, 2019.

Considerations of Resilience Management in Transportation. In: IRGC Resource Guide on Resilience (vol. 2): Domains of resilience for complex interconnected systems. Nogal, M. and O'Connor, A. , Dec. 2018.

Resilience assessment of transportation networks. In: Handbook of Sustainable and Resilient Infrastructure. Nogal, M. and O'Connor, A. ***Chapter 11, Routledge International Handbooks***, 2018, ISBN: 9781138306875.

Cyber-Transportation Resilience. Context and methodological framework. In: Resilience and Risk. Nogal, M. and O'Connor, A. ***pp. 415-426. Springer International Publishing***, 2017, DOI: 10.1007/978-94-024-1123-2_15, ISBN: 978-94-024-1122-5.

Folding the digital world into resilience-building efforts. In: Resilience and Risk. Roege P. E., Collier, Z. A., Chevardin, V., Chouinard, P. Florin, M. V., Lambert, J. H., Nielsen, K., Nogal, M. and Todorovic, B. ***pp. 383–414 Springer International Publishing***, 2017, ISBN: 978-94-024-1122-5.

Conference Proceedings (last 2 years)

Toward a clearer understanding of soft adaptation measures for climate-resilient road transport infrastructure. Arango, E.; Colijn, S.; Nogal, M.; Pregnolato, M. and Bosch-Rekveldt, M. *International Climate Resilience Conference 2025, Munich (Germany).*

Climate change induced carbonation of reinforced concrete buildings in European cities. Dimova S.; Sousa M.L.; Gervásio H.; Rianna G.; Bastidas-Arteaga E.; and Nogal M. *21st International Probabilistic Workshop (IPW 2025), Rostock (Germany).*

Advancing built cultural heritage conservation: Integration of Industry 5.0 principles and enabling technologies. Jimenez Rios, A.; Ramirez, R.; Petrou, M.L.; Plevris, V. and Nogal, M. *14th International Conference on Structural Analysis of Historical Constructions (SAHC 2025), Lausanne (Switzerland).*

Climate change induced carbonation and corrosion of EU building stock: recent findings. Dimova, S.; Polo López, C.S.; Sousa, M.L.; Rianna, G.; Bastidas-Arteaga, E.; Nogal, M.; Gervásio, H; Martorana, E.; Reder, A. and Athanasopoulou, A. *fib Symposium 2025. Concrete structures: extend lifespan, limit impacts, Antibes (France).*

Uncertainty quantification of wire tolerances in coil. Zubacicius, R.; Nogal, M.; Fu, G.; Curti, M. and Morales-Napoles, O. *6th International Conference on Uncertainty Quantification in Computational Science and Engineering, UNCECOMP2025, Rhodes (Greece).*

Application of data-driven approaches to uncertainty quantification in metal-based additive manufacturing processes. Zhang, Y., Nogal, M.; Rocha, L. and Morales Napoles, O. *6th International Conference on Uncertainty Quantification in Computational Science and Engineering, UNCECOMP2025, Rhodes (Greece).*

Forward uncertainty propagation for finite element models with non-gaussian parameters. Barros, R.; Rocha, I. B. C. M.; Nogal, M. and Morales-Napoles, O. *6th International Conference on Uncertainty Quantification in Computational Science and Engineering, UNCECOMP2025, Rhodes (Greece).*

A computation-free methodology for prioritizing simulation-based stress tests for assessing the resilience of transport systems. Nasrazadani, H.; Nogal, M.; Adey, B.T. and Stergios, A.M. *European Safety and Reliability and Society for Risk Analysis Europe. ESREL SRA-E 2025. Stavanger (Norway).*

Formalizing stakeholder's perspectives to assess systemic resilience to urban flooding. Arango, E.; Nogal, M.; Bosch-Rekveldt, M.; Soman, R.K. and Ninan, J. *European Safety and Reliability and Society for Risk Analysis Europe. ESREL SRA-E 2025. Stavanger (Norway).*

A methodology for prioritizing simulation-based stress tests for transportation systems. Nasrazadani, H., Adey, B.T., Nogal, M. and Mitoulis, S. *Engineering Mechanics Institute Conference and Probabilistic Mechanics & Reliability Conference (EMI/PMC 2024), Chicago (USA).*

Towards the creation of synthetic bridge digital twins what-if scenarios: study case and calibration. Jimenez Rios, A.; Demirlioglu, K.; Plevris, V. and Nogal, M. *9th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS), 2024, Lisboa (Portugal).*

The risk of divergence in resilience. Baroud, H.; Kammouh, O. and Nogal, M. *34-th European Safety and Reliability Conference (ESREL) 2024, Krakow (Poland).*

Effects of workforce productivity on infrastructure resilience. Sharmaa, N; Kammouh, O., Nogal, M. and Gardoni, P. *34-th European Safety and Reliability Conference (ESREL) 2024, Krakow (Poland).*

Towards fire-resilient landscapes: strategies for reducing exposure to extreme wildfires. Arango, E.; Nogal, M.; Dou, Y.; Sousa, H.; Matos, J.C. and Stewart M.G.. *34-th European Safety and Reliability Conference (ESREL) 2024, Krakow (Poland).*

Human role in existing bridge digital twin frameworks, towards industry 5.0. Jimenez Rios, A.; Plavis, V. and Nogal, M. *12th International Conference on Bridge Maintenance, Safety and Management (IABMAS 2024), 2024, Copenhagen (Denmark).*

Technical reports

Climate change adaptation for the built environment: developments and needs for structural design standards, Publications Office of the European Union, Luxembourg, 2025. Polo López, C.; Tsionis, G.; Athanasopoulou, A.; Sciarretta, F.; Reder, A.; Rianna, G.; Dosio, A.; Cagnazzo, C.; Formichi, P.; Croce, P.; Landi, F.; Nogal, M.; Dimova, S.; Sousa, ML.; Catarino, JM.; Oliveira Santos, L.; Deus, R.; Cabrinha, V.; Wichura B. and Castino, F. , doi:10.2760/3620533.

Impact of climate change on the corrosion of the European building stock, Publications Office of the European Union, Luxembourg, 2024. Dimova, S.; Polo López, C.S.; Sousa, M.L.; Rianna, G.; Bastidas-Arteaga, E.; Nogal, M.; Gervasio, H.; Martorana, E.; Reder, A. and Athanasopoulou, A.; G. , doi:10.2760/016004, JRC137288.

Expected implications of climate change on the corrosion of structures, EUR 30303 EN, Publications Office of the European Union, Luxembourg, 2020,. Sousa, M.L.; Dimova, S.; Athanasopoulou, A.; Rianna, G.; Mercogliano, P.; Villani, V.; Nogal, M.; Gervasio, H.; Neves, L.; Bastidas-Arteaga, E.; Tsionis; G. pp. 207-242, Butterworth-Heinemann, Elsevier , ISBN 978-92-76-20782-5, doi:10.2760/25513, JRC121312.

Software and other scientific outputs

Shang, Y.; Nogal, M. (2024): Data underlying the publication: Extreme-oriented sensitivity analysis using sparse polynomial chaos expansion. Application to train–track–bridge systems. Version 1. 4TU.ResearchData. dataset. *https://doi.org/10.4121/9a572878-a5b9-4976-a5a4-1de891f55fc8.*

MitC: An open-source software for construction project control and delay mitigation. Kammouh, O.; Nogal, M. and Kok, M. (2021) *https://github.com/mitigation-controller/mitc.*

ProFatigue: a software program for probabilistic assessment of experimental fatigue data sets. Castillo, E.; Fernandez-Cantelli, A.; Gonzalez-Collado, S.; Lopez-Aenlle, M. Nogal, M.; Pinto, H.; Przybilla, C. and Ramos-Garrido, A. (2012) *https://dcif.uniovi.es/profatigue.*

Academic recognition

Awards and distinctions

2024 **Best Paper Award** on Climate Change Governance by the TU Delft Climate Action Programme

2014 **ICCM2014 Best Paper Award**. 5th International Conference on Computational Methods (Cambridge)

2014 XIV **Talgo Award for Technological Innovation**. Talgo is a major Spanish manufacturer of high-speed and intercity trains and one of Europe's leading rail exporters.

2012 **I International Abertis Research Prize** and **IX National Abertis Research Prize** in Transport Infrastructure Management. Abertis is a major Spanish infrastructure management company, operating close to 8,000 km of high-capacity toll roads across 15 countries.

Invited lectures and keynote/guest talks

2025-11 **Guess talk** on The role of uncertainty in Resilience Engineering, hosted by **Lund University** (Sweden)

2024-03 **Guess talk** on Bringing the social dimension into resilience assessments of socio-physical systems hosted by **The University of Sydney** (Australia)

2023-02 **Guess talk** on Resilience Engineering. How to operationalise the concept of resilience, hosted by **ETHZ** (Switzerland)

2022-11 **Invited lecture** on Assessing resilience of road transport networks to wildfire hazards, hosted by **Stanford University** (USA)

2020-10 **Keynote** on *Prescription of maintenance interventions by the new generation of Eurocodes for climate-change resilient structures*, XV **International Conference on Durability of Building Materials and Components**, Barcelona (Spain)

2019-11 **Invited lecture** on Challenges of Extreme Events for Resilient Infrastructures, **Herrenhausen Conference** "Extreme Events: Building Climate Resilient Societies". Hannover (Germany)

2017-11 **Guess talk** on *The challenge of numerical assessment of the resilience of the built environment.* **Workshop ICSO 2017**, Castelldefels (Spain)

2017-01 **Invited lecture** on *Reducing uncertainty through the Structured Expert Elicitation: justification and methodology.* **TRUSS training week**, Barcelona (Spain)

2016-06 **Invited lecture** on *The challenge of the numerical assessment of resilience.* Advanced Research Workshop on Resilience-based approaches to critical infrastructure safeguarding, hosted by **NATO**

2016-05 **Invited lecture** on *Resilience: From the general to the specific.* Smart Resilience Conference. Science Gallery (Ireland)

2015-12 **Invited lecture** on *Results from FP7 RAIN Project relevant to impacts of climate change on structural design.* Workshop on implications of climate change on structural design, hosted by **Joint Research Centre**

2013-11 **Invited lecture** on *The observability techniques applied to Structural System Identification* hosted by the School of Engineering. **University of North Florida** (USA)

Scientific contributions and service

Participation in scientific committees

Since 2024 **Management team member** of TU Delft Safety and Security Institute (Netherlands)

Since 2023 **Board member** of the International Civil Engineering Risk and Reliability Association (CERRA)

Since 2022 **Scientific member** of working group on Resilience of existing structures, International Association for Bridge and Structural Engineering (IABSE)

Since 2019 **Associated Scientist** of the 4TU.Resilience Engineering within the 4TU.Federation (Netherlands)

Since 2017 **Expert member** of the Climate Change Adaptation and Fire Safety Engineering Networks coordinated by the European Joint Research Centre (JRC)

Organization of special sessions and workshops

2026-05 **Conference track** on *Defining and Determining Resilience of Critical Infrastructure and Communities*, Information Systems for Crisis Response and Management (ISCRAM 2026), The Hague (Netherlands).

2026-03 **Conference track** on *Digital foundations of Resilient Built Environments*, International Conference on Resilient Systems (ICRS 2026), Delft (Netherlands).

2024-06 **Special session** on *Recent ontological, methodological, and operational advances in resilience*, 34th European Safety and Reliability Conference (ESREL2024), Poland

2024-06 **Special session** on *Development and applications of computational methods for digital twins*, 9th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2024), Lisbon (Portugal)

2024-06 **Special session** on *Digital twins and industry 5.0: towards a sustainable bridge maintenance, safety, and management holistic approach*, 12th Conference on Bridge Maintenance, Safety and Management (IABMAS 2024), Copenhagen (Denmark)

2024-06 **Special session** on *Innovative methods for vulnerability and resilience analyses of infrastructures*, 3rd International Conference on Resilience, Earthquake Engineering, and Structural Health Monitoring (ICONREM), Turin (Italy)

2023-07 **Special session** on *Risk, reliability and resilience of complex systems*, 14th International conference on application of statistics and probability in Civil Engineering, ICASP14, Dublin (Ireland)

2022-11 **Workshop** on *Resilience of Complex Systems: feed-up, feedback, and feed-forward.* DESIRE programme (4TU.RE), Delft (Netherlands).

2022-08 **Special session** on *Transdisciplinary design of future sustainable and resilient infrastructure*, 32th European Safety and Reliability Conference (ESREL2022), Dublin (Ireland)

2021-09 **Special session** on *Decision Science for resilience*, 31st European Safety and Reliability Conference (ESREL2021), Angers (France)

2020-06 **Special session** on *Human performance in resilience, risk and safety assessments*, 30th European Safety and Reliability Conference and the 15th Probabilistic Safety Assessment and Management Conference (ESREL2020-PSAM15), Venice (Italy).

2020-06 **Special session** on *Life Cycle-Based Resilience Assessment and Management of Structural and Infrastructural Assets*, 30th European Safety and Reliability Conference and the 15th Probabilistic Safety Assessment and Management Conference (ESREL2020-PSAM15), Venice

2019-05 **Special session** on *Resilience assessment of transportation systems*, 13th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP13), Seoul (Korea)

2018-07 **Special session** on *Resilience of Bridges to Climate Change, Natural & Man Made Hazards*, 9th International Conference on Bridge Maintenance, Safety and Management (IABMAS 2018), Melbourne (Australia)

Reviewer service for research councils and funding bodies

Since 2017 Expert Evaluator for the **Research Executive Agency of the European Commission**, including research competition (MCSA and Pathfinder programs) and project evaluations

2024 Scientific Evaluator for the **European Science Foundation (Luxemburg)**

2023 External reviewer for **Icelandic Science and Technology Policy Council**.

2020 Scientific Evaluator for the **National Science Centre (Poland)**

Editorial service

Since 2024 **Editorial Board Member** of the journal Reliability Engineering and System Safety

2024-2025 **Guess Editor** of Special Issue on Advancements in Integrating Physics and Machine Learning for System Reliability, Risk, and Resilience Analysis, in journal of Reliability Engineering and System Safety (RESS)

2018-2024 **Editorial Board Member** of Springer Nature Applied Sciences (SNAS) and Alexandria Engineering Journal (Elsevier), Civil Engineering Section

External examiner of PhD students

2024-12 PhD thesis by Hamed Mehranfar, **ETHZ** (Switzerland)

2021-09 PhD Thesis by Leandro do Carmo Martins, **Universitat Oberta de Catalunya** (Spain)

2019-01 PhD Thesis by Radson Lima Figueiredo, **Trinity College Dublin** (Ireland)

2018-12 PhD Thesis by Aljoscha Gruler, **Universitat Oberta de Catalunya** (Spain)

2018-06 PhD Thesis by Jun LEI, **Polytechnic University of Catalunya** (Spain)

2017-12 PhD Thesis by Elena Mora Villazan, **University of Cantabria** (Spain)

2017-06 PhD Thesis by Laura Calvet Liñán, **University of Catalunya** (Spain)

2017-01 PhD Thesis by Miguel Casero, **University of Oviedo** (Spain)

2016-06 PhD Thesis by Paola Moraga, **University of Cantabria** (Spain)

2015-12 PhD Thesis by Zacarias Grande Andrade, **University of Cantabria** (Spain)

2013-05 PhD Thesis by José Ramón Díaz de Terán, **Polytechnic University of Catalunya** (Spain)

2012-09 PhD Thesis by Eusebio Angulo, **University of Castilla-La Mancha** (Spain)

Teaching and supervision

Courses taught

Since 2022 CME4150 Managing Uncertainty & Data. MSc Degree in Construction Management and Engineering. TU Delft **(coordinator).**

Since 2022 CME5021 Research & Development Methods. MSc Degree in Construction Management and Engineering. TU Delft (lecturer)

2021-2022 CIE4130 Probabilistic Design. MSc Degree in Civil Engineering. TU Delft (lecturer)

2021-2022 AR3CS100 Graduation Studio Cross Domain City of the Future. MSc Degree in Architecture, Urbanism & Building Sciences. TU Delft (lecturer)

Since 2020 CIE4391 (CME4500, 4501) Engineering Systems Optimization. MSc Degree in Construction Management and Engineering. TU Delft **(coordinator)**

Since 2020 CEGM1000 Modelling, Uncertainty and Data for Engineers. MSc Degree in Civil Engineering. TU Delft (lecturer)

2019-2022 CIE4381 (CME4300) Engineering Asset Management MSc Degree in Construction Management and Engineering. TU Delft (lecturer)

2018-2019 Civil Engineering for Sustainable Development. MSc in Development Practice. Trinity College Dublin (lecturer)

2017-2019 Advanced Design of Structures. BAI/MAI in Civil Eng. Trinity College Dublin **(coordinator)**

2017-2019 Engineering Design III. BAI/MAI in Civil Eng. Trinity College Dublin **(coordinator)**

2016-2018 Solids and structures. BAI/MAI in Civil Eng. Trinity College Dublin (lecturer)

2015-2017 Research Methods. MAI/MSc in Civil Eng. Trinity College Dublin (lecturer)

2013-2014 Computer Modeling in Engineering. MSc in Civil Engineering. University of Cantabria (lecturer)

2011-2012 Algebra and Geometry. BAI/MAI in Mechanical Engineering, BAI/MAI in Industrial Electronics and Automation and BAI/MAI in Electrical Eng. University of Cantabria (lecturer)

Supervision of PhD theses

PhD theses supervised to completion

2025-09 *Virtual laboratories for mathematical learning in online and face-to-face higher education environments* by Neila Campos. Faculty of Computer Science, Multimedia and Telecommunication. Universitat Oberta de Catalunya (Spain). Supervisors: Drs M. Nogal and A. Perez Navarro

2025-05 *Probabilistic-based methods for extreme traffic loads mapping to assist bridge portfolio management* by Miguel Angel Mendoza Lugo. Faculty of Civil Engineering & Geosciences, TU Delft. Supervisors: Drs O. Morales and M. Nogal

2025-03 *Real-time traffic prediction and optimisation in intelligent transportation systems under variable speed limits* by Amirreza Kandiri. School of Civil Engineering, University College Dublin (Ireland). Supervisors: Drs R. Teixeira and M. Nogal

2024-03 *Design optimization for railway transition zones* by Yue Shang. Faculty of Civil Engineering & Geosciences, TU Delft. Supervision: Drs R. Wolfert and M. Nogal

2021-05 *Structural System Identification by Dynamic Observability Technique* by Tian Peng. School of Civil Engineering. Polytechnic University of Catalunya (Spain). Supervision: Drs J.R. Casas, J. Turmo and M. Nogal

2019-02 *Probabilistic optimisation of the design of offshore wind turbine towers* by Rui Teixeira. School of Civil, Structural & Environmental Eng. Trinity College Dublin (Ireland). Supervision: Drs A. O'Connor and M. Nogal

2017-12 *Resilience of Traffic Networks to Extreme Weather Events: Analysis and Assessment*, by Beatriz Martinez-Pastor. School of Civil, Structural & Environmental Eng. Trinity College Dublin (Ireland). Supervision: Drs A. O'Connor and M. Nogal

PhD theses under supervision

Since 2025 *Integrated big data processing and management of long-term monitoring* by Lukas Bohem. Faculty of Civil Engineering & Geo, TU Delft. Supervisors: Drs G. Giardina and M. Nogal

Since 2025 *Improving decision making for infrastructure management though multi-fidelity digital twins (MFDT)* by Ahmed Shalabi. Faculty of Civil Engineering & Geosciences, TU Delft. Supervisors: Drs M. Hertogh and M. Nogal

Since 2025 *Artificial super intelligence for autonomous inspection and system state monitoring to improve system resilience* by Yoosef Habibi. Faculty of Civil Engineering & Geosciences, TU Delft. Supervisors: Drs G. Giardina and M. Nogal

Since 2024 *Uncertainty quantification and reduction for industrial critical components using probabilistic and deep learning-based approaches* by Yunfan Zhang. Faculty of Civil Engineering & Geosciences, TU Delft. Supervisors: Drs O. Morales and M. Nogal

Since 2024 *Efficient techniques for the assessment of uncertainties of physics-based models on the design of critical components* by Renan Melo Barros. Faculty of Civil Engineering & Geosciences, TU Delft. Supervisors: Drs O. Morales and M. Nogal

Since 2024 *Reliability analysis of linear actuators* by Romas Zubavicius. Faculty of Civil Engineering & Geosciences, TU Delft. Supervisors: Drs O. Morales and M. Nogal