Dr. Alejandro Jiménez Rios
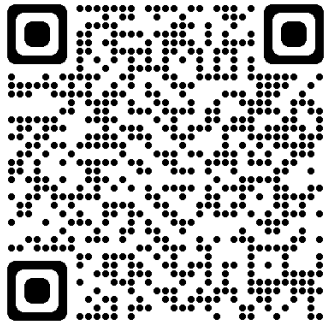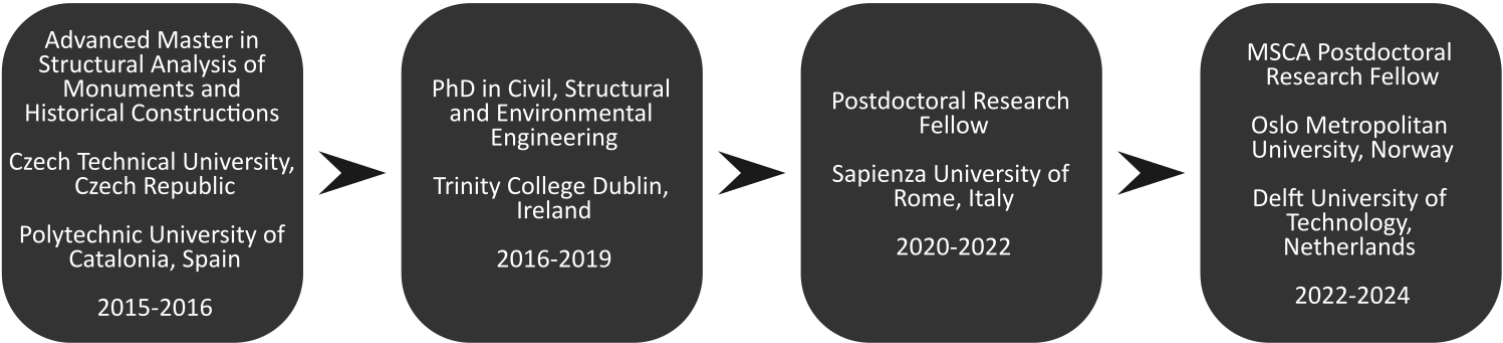
Executive Summary CV

*For a full version of my CV see attachment, scan the QR code or check my website at
https://jimnezra.github.io/

Academic path

Advanced Master in Structural Analysis of Monuments and Historical Constructions

Czech Technical University, Czech Republic

Polytechnic University of Catalonia, Spain

2015-2016

> PhD in Civil, Structural and Environmental Engineering

Trinity College Dublin, Ireland

2016-2019

> Postdoctoral Research Fellow

Sapienza University of Rome, Italy

2020-2022

> MSCA Postdoctoral Research Fellow

Oslo Metropolitan University, Norway

Delft University of Technology, Netherlands

2022-2024

Research Interests

Digital Twins · Artificial Intelligence · Bridge Information Modeling · Constitutive Models · Sustainability · Resilience · Computational Methods · Robustness · Non-Linear FEM Simulations · Reliability · Masonry · Experimental Validation · Structural Health Monitoring · Existing Structures · Bridges · SDG 9 · SDG 11 · Anomaly Detection Algorithms · Cultural Heritage Conservation

Tracked Record

SC — Documents: 9   Citations: 20   h-index: 3

Documents: 8   Citations: 12   h-index: 2

g — Documents: 18   Citations: 31   h-index: 3

RG — Documents: 28   Citations: 34   h-index: 3

Teaching Experience

FEM in Structural analysis · Materials · Engineering Design · Solids and Structures · Advanced Theory of Structures · Concrete Constructions · Mechanics of Solids · Structural Design

Teaching Philosophy

Active Learning · Integrity · Deep Learning · SoTL · Technology Supported Teaching · Inclusive Teaching · Evidence Based Teaching · Safe Learning Environment

Address: Rebel Building, 7th floor, Universitetsgata 2, 0164 Oslo, Norway.
Phone number: +47 67238838.
Email: alejand@oslomet.no

Dr. Alejandro Jiménez Rios

1. Contact Information

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Phone number: +47 67238838
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ORCID*: https://orcid.org/0000-0003-4470-255X*
Scopus Author ID: *57203578697*
Web of Science ResearcherID: *AAT-5218-2020*
Google Scholar: *Alejandro Jiménez Rios*
ResearchGate*: Alejandro Jiménez Rios*
LinkedIn: *Alejandro Jiménez Rios*

2. Research Interests

My research interests include: the conservation of existing built heritage through inspection, diagnosis, intervention design and monitoring of buildings and bridges with historical/cultural value; the study of vernacular and sustainable architecture; exploring the mechanical properties and structural behaviour of masonry, bamboo and earthen structures through the application of non-destructive and large-scale experimental testing, specialized constitutive models and advanced non-linear numerical simulations; robustness and resilience of the built environment; as well as the development and implementation of new technologies in the architecture, construction and engineering industry such as artificial intelligence, the internet of things, structural health monitoring, asset information modelling, and digital twins. With my research, I aim at contributing to the achievement of Sustainable Development Goals 9 and 11 as adopted by the United Nations.

3. Teaching Philosophy

My teaching philosophy is centred around creating an active, inclusive, and safe learning environment that fosters the creation of deep learning knowledge among my students. I believe using technology can greatly support and enhance student learning, especially when it is applied following evidence-based best teaching practices. My goal as a Structural Engineering Professor is to develop on my students the skills and knowledge necessary for success in the field and to empower them with learning tools that will allow them to take ownership of their own learning and further professional development. I conduct myself with integrity following strict codes of conduct stablished by the institutions where I work, I strive to adopt diversity, equity, and inclusion principles by respecting my students' and colleagues' identity, nationality, socioeconomic level, gender, sexual orientation, disabilities, and age. I am interested in implementing a Scholarship of Teaching and Learning approach on my teaching practice to contribute to the improvement of teaching in structural engineering by publishing and sharing my own experience and expertise on educational journals.

4. Current Position

01/11/2022 - Present:	MSCA Postdoctoral Research Fellow.
Universities:	Oslo Metropolitan University, Norway - Delft University of Technology, Netherlands.
Supervisors:	Prof. Vagelis Plevris and Prof. Maria Nogal.
Description:	My MSCA fellowship has two specific objectives. The first objective is to build digital twin models of heritage/conventional bridges to assess and identify the highest performing anomaly detection algorithm (ADA) for damage and/or significant decay detection. Its second objective is to develop an ADA-informed open-source decision-making tool based on a reliability-based bridge management approach, to assess the need for bridge intervention while explicitly considering the bridge's cultural heritage value.
Funding:	HORIZON.1.2 - Marie Skłodowska-Curie Actions (MSCA) grant agreement No 101066739.
Website:	*https://alejandoslomet.github.io/*

5. Education

01/09/2016 - 03/10/2019:	PhD in Civil, Structural and Environmental Engineering.
University:	Trinity College Dublin, Ireland.
Supervisor:	Prof. Dermot O'Dwyer.
Thesis:	Conservation of earthen vernacular architecture in Ireland. Study of the mechanical properties and the structural behaviour of cob.
Funding:	Internal University funding Studentship Award.

01/09/2017 - 31/08/2018:	Postgraduate Certificate in Statistics.
University:	Trinity College Dublin, Ireland.
Description:	Base module, introduction to regression and design of experiments.
Funding:	Internal University funding Studentship Award.

01/09/2015 - 31/08/2016:	Erasmus Mundus Advanced Master in Structural Analysis of Monuments and Historical Constructions (SAHC).
Universities:	Czech Technical University, Czechia and Polytechnic University of Catalonia, Spain.
Supervisors:	Prof. Sergio Henrique Pialarissi Cavalaro and Prof. Pere Roca Fabregat.
Thesis:	Simulation of masonry structural behaviour using the Discrete Element Method.
Funding:	Erasmus+ Scholarship.

01/09/2009 - 31/08/2014:	Bachelor's Degree in Civil Engineering, Structural Engineering Specialization Path.
University:	University of Guadalajara, Mexico.
Supervisor:	Prof. Miguel Zamora Palacios.
Thesis:	Comparative analysis of plane frames' structural behaviour considering the effect of end length offsets.

01/07/2012 - 30/06/2013:	International Academic Exchange.
University:	National Institute of Applied Sciences (INSA) Lyon, France.
Funding:	Mexfitec Scholarship.

6. Research Experience

01/11/2022 - Present:	MSCA Postdoctoral Research Fellow.
Universities:	Oslo Metropolitan University, Norway and Delft University of Technology, Netherlands.
Supervisors:	Prof. Vagelis Plevris and Prof. Maria Nogal.
Description:	My MSCA fellowship has two specific objectives. The first objective is to build digital twin (DT) models of heritage/conventional bridges to assess and identify the highest performing anomaly detection algorithm (ADA) for damage and/or significant decay detection. Its second objective is to develop an ADA-informed open-source decision-making tool based on a reliability-based bridge management approach, to assess the need for bridge intervention while explicitly considering the bridge's cultural heritage value.
Funding:	HORIZON.1.2 - Marie Skłodowska-Curie Actions (MSCA) grant agreement No 101066739.
Website:	*https://alejandoslomet.github.io/*

01/11/2020 - 31/10/2022:	Postdoctoral Researcher.
University:	Sapienza University of Rome, Italy.
Description:	The research project in which I participated focused on the study of the structural behaviour of masonry with the use of a non-standard limit analysis method implemented through the ALMA 2.0 program and on the development/extension of this software.
Funding:	Internal University funding.

Summer 2018:	Main researcher.
University:	University of Cantabria, Spain.

7. Received Funding

- *2022-2024 Marie Skłodowska-Curie Actions Individual Fellowship:* OsloMet/TU Delft. Around 227,000 € which cover living allowance, mobility allowance, family allowance, research, training, and networking contributions as well as management and indirect contributions.
- *2020-2021 Internal University funding:* Sapienza University of Rome. Around 50,000 € which covered health insurance, travel expenses and a monthly stipend of 1600 €.
- *2016 Internal University funding Studentship Award: Trinity College Dublin*. Around 100,000 € which covered tuition fees, research expenses and a monthly stipend of 1 200 €.
- *2015 Erasmus+ Scholarship*: Around 25,000 € which covered tuition fees, health insurance and a monthly stipend of 1 000 €.
- *2012 Mexfitec Scholarship*: Around 20,000 €, which covered tuition fees, return flight Mexico-France, two-months French course, health insurance and a monthly stipend of 800 €.

8. Tracked Record

As of 01/04/2023 I have published a total of 8 peer-reviewed journal papers, 5 peer-reviewed conference papers, 3 conference posters or presentations, 3 dissertations, 9 databases and other open science related publications.

Scopus:	h-index:3, citations:20, documents:9.
Web of Science:	h-index:2, citations:12, documents:8.
Google Scholar:	h-index:3, citations:31, documents:18.
ResearchGate:	h-index: 3 citations: 34, research elements: 28.

9. Publications

Peer-reviewed scientific journal papers:

- **Jiménez Rios, A.,** Nela, B., Pingaro, M., Reccia, E., & Trovalusci, P. (Under review) Parametric analysis of masonry arches following a limit analysis approach: influence of joint friction, pier texture and arch shallowness. Mathematics and Mechanics of Solids. *In this paper, parameters such as pier texture, joint friction angle, and arch shallowness, namely shallow, semi-circular, and pointed arches, were investigated under three scenarios: horizontal, concentrated vertical live load applied at mid-span and quarter-span.*
- **Jiménez Rios, A.,** Plevris, V., & Nogal, M. (Accepted for publication) Decision-making for bridge management through digital twin-based anomaly detection, a systematic review. Frontiers in Built Environment. T*his paper, collects and synthesizes state-of-the-art knowledge and information about how bridge information modelling, finite elements, and bridge health monitoring are combined and used in the creation of digital twins (DT) of bridges, and how these models could generate damage scenarios to be used by anomaly detection algorithms for damage detection on bridges, especially in those bridges with cultural heritage. DOI: 10.3389/fbuil.2023.1176621.*
- Nela, B., **Jiménez Rios, A.,** Pingaro, M., Reccia, E., & Trovalusci, P. (2023) Masonry arches simulations using cohesion parameter as code enrichment for limit analysis approach. International Journal of Masonry Research and Innovation. *In this paper, the cohesion incorporation is calibrated for a variety of in-plane applications, accounting for the joints' indirect tensile strength, that can simulate the strengthening measures. DOI: 10.1504/IJMRI.2023.10053576.*
- Nela, B., **Jiménez Rios, A.,** Pingaro, M., Reccia, E., & Trovalusci, P. (2022) Limit analysis of locally reinforced masonry arches. Engineering Structures. *In this paper, the influence of partial reinforcement on the structural response of masonry arches is studied. DOI: 10.1016/j.engstruct.2022.114921.*
- **Jiménez Rios, A.**, Nela, B., Pingaro, M., Reccia, E., & Trovalusci, P. (2022) Rotation and sliding collapse mechanisms for in plane masonry pointed arches: statistical parametric assessment. Engineering Structures. *In this paper, the effects that different geometrical (slenderness and sharpness) and mechanical (friction and cohesion) parameters have on the in-plane structural response of masonry pointed arches are investigated. Two load scenarios are studied: vertical self-weight plus a proportional horizontal live load and vertical*

self-weight plus a vertical concentrated live load applied to individual voussoir. [DOI: 10.1016/j.engstruct.2022.114338.](#)

- **Jiménez Rios, A.**, Pingaro, M., Reccia, E., & Trovalusci, P. (2022) Statistical assessment of in-plane masonry panels using limit analysis with sliding mechanism. ASCE Journal of Engineering Mechanics, special issue "Recent advances on the mechanics of masonry structures". *In this paper the effects that different geometrical (panel ratio, block ratio, bond type) and mechanical (friction ratio) parameters have on the in-plane structural response of brick masonry panels are investigated. [DOI: 10.1061/(ASCE)EM.1943-7889.0002061.](#)*

- **Jiménez, A. R.**, & O'Dwyer, D. (2020) Experimental validation of the application of the flat jack in cob walls. Construction and building materials. 254, p.119148. *The purpose of the experimental campaign presented in this paper was to assess the feasibility of the technique to measure the average compressive levels of stress in existing cob walls and determine their mechanical properties. [DOI: 10.1016/j.conbuildmat.2020.119148.](#)*

- **Jiménez Rios, A.**, & O'Dwyer, D. (2020). Data collected from the experimental validation for the application of flat jack tests in cob walls. Data in brief. 31, p.105764. *It contains data collected during the consolidation process of six cob wallettes and data collected after single and double flat jack test were applied for the first time to a set of cob wallettes at the laboratory facilities of the Department of Civil, Structural and Environmental Engineering at Trinity College Dublin. [DOI: 10.1016/j.dib.2020.105764](#).*

- **Jiménez Rios, A.**, & O'Dwyer, D. (2020). Flat jack test adapted for its application in cob walls. MethodsX. 7, p.101003. *Two standards have been developed for the application of the technique in masonry walls and this paper presents the adaptation of those methods for its application in cob walls. [DOI: 10.1016/j.mex.2020.101003.](#)*

- **Jiménez Rios, A.**, & O'Dwyer, D. (2019). Numerical modelling of cob´s non-linear monotonic structural behaviour. International Journal of Computational Methods. 17, p.1940013. *This paper presents the results obtained of the simulation of cob's nonlinear monotonic behaviour using two well-known finite element commercial packages. [DOI: 10.1142/S0219876219500464.](#)*

Peer-reviewed conference papers published in conference proceedings:

- **Jiménez Rios, A.,** Plevris, V., & Nogal, M. (Abstract accepted) Uncertainties in the synthetic data generation for the creation of bridge digital twins. To be presented at the 5th International Conference on Uncertainty Quantification in Computational Science and Engineering, Athens, Greece. T*his paper explores the uncertainties involved in the synthetic data generation methodologies and tools, which could be used as a faster and cheaper alternative to real monitoring, for the creation and development of DT prototypes of bridges for both industry and research-oriented purposes.*

- **Jiménez Rios, A.,** Plevris, V., & Nogal, M. (Accepted for publication) Synthetic data generation for the creation of bridge digital twins what-if scenarios. To be presented at the 9th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, Athens, Greece. T*his paper aims at exploring the currently available synthetic data generation methodologies and tools, which could be used as a faster and cheaper alternative to real monitoring, for the creation and development of DT prototypes of bridges for both industry and research-oriented purposes.*

- Nela, B., Pingaro, M., **Jiménez Rios, A.**, Reccia, E., & Trovalusci, P. (2021). Masonry simulations using cohesion parameter as code enrichment for a non-standard limit analysis approach. Abstract sent to the 7th Mechanics of Masonry Structures Strengthened with Composite Materials – Online Conference. *The cohesion incorporation is calibrated for a variety of in-plane applications, accounting for the joints' indirect tensile strength that can simulate the strengthening measures. [DOI: 10.5281/zenodo.7496239](#).*

- **Jiménez Rios, A.**, Grimes, M. & O'Dwyer, D. W. (2021). Experimental campaign on the use of the flat jack test in cob walls. Abstract submitted to the 12th International Conference on Structural Analysis of Historical Constructions. *This paper presents the firs experimental campaign performed to validate the use of this Minor Destructive Technique (MDT) to determine the levels of stress in cob walls and their mechanical properties. [DOI: 10.23967/sahc.2021.099](#).*

- **Jiménez Rios, A.**, & O'Dwyer, D. W. (2019). External post-tensioning system for the strengthening of historical stone masonry bridges. Paper presented at the 11th International Conference on Structural Analysis of Historical Constructions, Cuzco, Peru. *The objective of this paper is to present the evaluation of the feasibility of the use of an external post-tensioning arrangement to strengthen historical stone masonry bridges. The arrangement proposed is an alternative to those already existent and developed by other authors. [DOI: 10.1007/978-3-319-99441-3_168](#).*

- **Jiménez Rios, A.**, & O'Dwyer, D. (2018). Earthen buildings in Ireland. Paper presented at the 6th International Congress on Construction History, Brussels, Belgium. Shortlisted within the top 10 best papers presented by PhD Students. *The objective of this paper is to present a summarized and concise picture of the present situation of the remaining earthen buildings in the country, identify their main characteristics, the values that make such buildings important, evaluate their vulnerability as vernacular architectural style and therefore, understand and better approach any future intervention on such kinds of structures. DOI: 10.5281/zenodo.7494070.*
- **Jiménez Rios, A.**, & O'Dwyer, D. (2018). FEM non-linear modelling of cob using ANSYS. Paper presented at the 9th International Conference on Computational Methods, Rome, *Italy. The aim of this paper is to evaluate the available material models' suitability for the modelling of cob's structural behaviour in one of the most used FEM software in the market. DOI: 10.5281/zenodo.7494038.*

Book chapters:

- **Jiménez Rios, A.** *et al.* (Under development). Enhancing the resilience of existing bridges to short- and long-term impact of climate change. IABSE Task Group 5.8 Resilience of Existing Structures. *The chapter will deal with the definition of resilience at a structure level, for existing structures, beginning with the consequences of failure or service disruption of a single or combination of components from a specific structure and following to analyse the consequences to the network level.*

Dissertations:

- **Jiménez Rios, A.** (2019). Conservation of earthen vernacular architecture in Ireland. Study of the mechanical properties and the structural behaviour of cob. PhD thesis. Trinity College Dublin. *The thesis presents a summarized and concise picture of the present situation of the remaining earthen buildings in Ireland, identifies their main characteristics, the values that make such buildings important, evaluates their vulnerability as vernacular architectural style and therefore, allows to understand and better approach any future intervention on such kinds of structures. DOI: 10.5281/zenodo.7492403.*
- **Jiménez Rios, A.** (2016). Simulation of structural behaviour of masonry using discrete element modelling. Master thesis. Polytechnic University of Catalonia, Spain. *The objective of this master thesis is to evaluate the applicability of DEM to simulate the structural behaviour of masonry at a micro and macro-scale level, reproducing the response in terms of deflections, ultimate load and failure modes. DOI: 10.5281/zenodo.7492479.*
- **Jiménez Rios, A.** (2014). Comparative analysis of plane frames' structural behaviour considering the effect of end length offsets. Bachelor thesis. University of Guadalajara, Mexico. *The purpose of this thesis was to present a more realistic model to describe the structural response of plane frames by considering the effect that the actual geometrical dimensions of the nodes have in terms of lateral displacements. DOI: 10.5281/zenodo.7492520.*

Conference posters and presentations:

- Nela, B., **Jiménez Rios, A.**, Pingaro, M., Reccia, E., & Trovalusci, P. (2022). A limit analysis approach to the assessment of masonry arch structures under the influence of fundamental parameters. Presented at the 11th International Civil Engineering, Infrastructure and Environment Conference (IC-CEIE) 2022, Kosovo. *Research on critical parameters affecting the safety levels of piers under the thrust of arches is carried out using an in-house code (ALMA) that uses limit analysis as a rigid block approach to modelling masonry with frictional joints. DOI: 10.5281/zenodo.7580693.*
- Nela, B., **Jiménez Rios, A.**, Pingaro, M., Reccia, E., & Trovalusci, P. (2022). Limit analysis for masonry arches: influence of pier texture, arch shallowness, and joint friction. Presented at the XXV CONVEGNO AIMETA. *Using an in-house code that utilizes limit analysis as a rigid block approach to modelling masonry with frictional joints, a study on the crucial parameters impacting the safety level of piers under the thrust of arches is performed. DOI: 10.5281/zenodo.7579527.*
- **Jiménez Rios, A.** (2019). Proposal for the sustainable reuse and redevelopment of Newtownbutler's Lanesborough Hotel and former Market House. Poster presented at the Ulster Architectural Heritage & Irish Georgian Society Summer School. *The proposal consists in the adaptation of the Market House into a Craft Training and Sustainability Research Centre. DOI: 10.5281/zenodo.7496552.*

Databases:

- **Jiménez Rios, A.,** Plevris, V. and Nogal, M. (2023). Zenodo. Bibliographic Data from the Digital Twin Anomaly Detection Decision-Making for Bridge Management Systematic Review. *This database contains all the bibliographic information about the 8673 records found after applying the Search Strategy used for the Digital Twin Anomaly Detection Decision-Making for Bridge Management Systematic Review*. [*DOI: 10.5281/zenodo.7548017*](#).

- **Jiménez Rios, A.,** Pingaro, M., Trovalusci, P., Nela, B. and Reccia, E. (2022). Zenodo. Data from the parametric analysis of masonry buttressed arches with limit analysis subjected to vertical self-weight plus a proportional horizontal live load. *For each one of the simulations performed from the parametric analysis of masonry buttressed arches with limit analysis subjected to vertical self-weight plus a proportional horizontal live load, this database contains a .txt, a .vtk and a .png file. In the .txt file the elapsed time and the collapse multiplier of each simulation can be found. The .vtk file contains all the geometry and displacement values of every masonry buttressed arch. Finally, the .png file presents the collapse mechanism obtained.* [*DOI: 10.5281/zenodo.6811858*](#).

- **Jiménez Rios, A.,** Pingaro, M., Trovalusci, P., Nela, B. and Reccia, E. (2022). Zenodo. Data from the parametric analysis of masonry buttressed arches with limit analysis subjected to vertical self-weight plus a proportional concentrated vertical live load applied at mid-span, *For each one of the simulations performed from the parametric analysis of masonry buttressed arches with limit analysis subjected to vertical self-weight plus a proportional concentrated vertical live load applied at mid-span, this database contains a .txt, a .vtk and a .png file. In the .txt file the elapsed time and the collapse multiplier of each simulation can be found. The .vtk file contains all the geometry and displacement values of every masonry buttressed arch. Finally, the .png file presents the collapse mechanism obtained.* [*DOI: 10.5281/zenodo.6811832*](#).

- **Jiménez Rios, A.,** Pingaro, M., Trovalusci, P., Nela, B. and Reccia, E. (2022). Zenodo. Data from the parametric analysis of masonry buttressed arches with limit analysis subjected to vertical self-weight plus a proportional concentrated vertical live load applied at quarter-span. *For each one of the simulations performed from the parametric analysis of masonry buttressed arches with limit analysis subjected to vertical self-weight plus a proportional concentrated vertical live load applied at quarter-span, this database contains a .txt, a .vtk and a .png file. In the .txt file the elapsed time and the collapse multiplier of each simulation can be found. The .vtk file contains all the geometry and displacement values of every masonry buttressed arch. Finally, the .png file presents the collapse mechanism obtained.* [*DOI: 10.5281/zenodo.6811797*](#).

- **Jiménez Rios, A.,** Pingaro, M., Trovalusci, P., Nela, B. and Reccia, E. (2021). Zenodo. Data from the parametric analysis of masonry pointed arches with limit analysis subjected to vertical self-weight plus a proportional horizontal live load. *For each one of the simulations performed from the parametric analysis of masonry pointed arches with limit analysis, this database contains a .txt, a .vtk and a .png file. In the .txt file the elapsed time and the collapse multiplier of each simulation can be found. The .vtk file contains all the geometry and displacement values of every masonry pointed arch. Finally, the .png file presents the collapse mechanism obtained.* [*DOI: 10.5281/zenodo.5146824*](#).

- **Jiménez Rios, A.,** Pingaro, M., Trovalusci, P., Nela, B. and Reccia, E. (2021). Zenodo. Data from the parametric analysis of masonry pointed arches with limit analysis subjected to vertical self-weight plus a vertical concentrated live load. *For each one of the simulations performed from the parametric analysis of masonry pointed arches with limit analysis, this database contains a .txt, a .vtk and a .png file. In the .txt file the elapsed time and the collapse multiplier of each simulation can be found. The .vtk file contains all the geometry and displacement values of every masonry pointed arch. Finally, the .png file presents the collapse mechanism obtained.* [*DOI: 10.5281/zenodo.5146866*](#).

- **Jiménez Rios, A.,** Pingaro, M., Trovalusci, P., and Reccia, E. (2020b). Zenodo. Data from the parametric analysis of masonry panels with limit analysis. *For each one of the simulations performed from the parametric analysis of masonry panels with limit analysis, this database contains a .txt, a .vtk and a .png file. In the .txt file the elapse time and the collapse multiplier of each simulation can be found. The .vtk file contains all the geometry and displacement values of every masonry panel. Finally, the .png file presents the collapse mechanism obtained.* [*DOI: 10.5281/zenodo.4320201*](#).

- **Jiménez Rios, A.** (2019), Cob wallettes' consolidation data. Mendeley Data. *The raw data is divided in three files. The first one contains all the data points collected during the first cycle loading for load (kN), and displacement (mm) for each wallette. The second file contains the same data collected during a second loading cycle (except for wallette W1). Finally, the third one contains data points collected during the consolidation period of five days for load (kN), displacement (mm) and time (min).* [*DOI: 10.17632/twbf86wxtx.1*](#).

- **Jiménez Rios, A.** (2019), Cob cylinder's data, Mendeley Data. *The raw data file contains all the data points collected for load (N), test time (s) and displacement (mm) for each cylinder. DOI: 10.17632/h8ksd6mvkj.1.*

Open science related publications:

- **Jiménez Rios, A.,** Plevris, V. and Nogal, M. (2023). Zenodo. DTADD Systematic Review Preprint. *This document presents the preprint of the systematic review for the DTADD project submitted for publication at Frontiers in Built Environment. DOI: 10.5281/zenodo.7673718.*
- **Jiménez Rios, A.,** Plevris, V. and Nogal, M. (2023). Zenodo. DTADD Systematic Review Protocol (amended). *This document presents the protocol adopted to perform a systematic review for the DTADD project following the checklist provided by PRISMA and guidelines of the PRISMA-P Explanation and Elaboration. DOI: 10.5281/zenodo.7546576.*
- **Jiménez Rios, A.,** Plevris, V. and Nogal, M. (2023). Zenodo. DTADD Systematic Review Search Strategy (amended). *This document presents the search strategy adopted to perform the systematic review of the DTADD project and it is based on the PRISMA-S checklist. DOI: 10.5281/zenodo.7546557.*
- **Jiménez Rios, A.,** Pingaro, M., Trovalusci, P., and Reccia, E. (2020a). Code from the parametric analysis of masonry panels with limit analysis. *The code can be used to generate the geometry of all the tested masonry panels. It uses the functions defined in the masonry_panels module within the Sapienza package. It requires that the user specifies brick length, brick height, number of horizontal bricks and number of vertical bricks. The script generates the polylines in Autocad. DOI: 10.5281/zenodo.4321939.*

10. Academic Experience

2023:	Lecturer.
Activities:	Co-Lecturer at the Department of Built Environment in the following undergraduate and graduate courses:

- BYTS2500 Concrete Constructions.
- MABY4100 Finite Element Method in Structural Analysis (fall semester).

University:	Oslo Metropolitan University, Norway.

2021:	New Master Program on Civil Engineering Creation Committee Member.
Activities:	I participated in the committee in charge of designing and implementing a new Master program in the field of Civil Engineering at the Department of Civil and Topography Engineering.
University:	University of Guadalajara, Mexico.

2019:	Assessment Assistant.
Activities:	Support of Trinity Assessment Fellows to map and analyse assessment practices within Schools across the University. Digital badge on programme-focused assessment.
University:	Trinity College Dublin, Ireland.

2016 – 2019:	Teaching Assistant.
Activities:	Teaching assistant at the following engineering courses of the Departments of Civil, Structural and Environmental Engineering and Department of Mechanical Engineering:

- 2E9 Engineering design.
- 3A2 Structural design.
- 2E8 Materials.
- 3E4 Innovation and entrepreneurship.
- 2E4 Solids and structures.
- 4E6 Advanced theory of structures.
- 2E4 Solids and structures.
- 3B3 Mechanics of solids.
- C05 Spatial analysis using GIS.

University:	Trinity College Dublin, Ireland.

2018 – 2019:	Workshops.
Activities:	Organization and facilitation of three one-day workshops on conservation, vernacular architecture, earthen construction techniques and sustainability.

University: Trinity College Dublin, Ireland.

11.   *Pedagogical Education*

2023: Teaching and Learning in Higher Education.
Description: Compulsory qualification offer that meets the minimum requirement for basic pedagogical competence for academic staff at universities and colleges:
- Student learning in higher education.
- Designing teaching in higher education.
- Assessment and evaluation in higher education.
- Forms of knowledge in professional education.
- Research supervision.

University: Oslo Metropolitan University, Norway.

2022: 10th Online E-Learning Seminar for University Professors.
Description: 1) Assessment in ICT-supported learning environments, 2) Online game-based learning, 3) The transformation of teaching in online learning environments, 4) Strategies for teaching science and technology online and 5) Strategies for teaching social sciences online.
University: The Catholic University of "Santa Teresa de Jesús de Ávila" (UCAV), Spain.

2018: Reflective Teaching Assistantship Course.
Description: Introduction to current learning theories and teaching practices within higher education. Practical application during an undergraduate lab demonstration.
University: Trinity College Dublin, Ireland.

12.   *Supervising Experience*

2023: Structural damage identification with non-destructive vibrational experiments (Ongoing).
Student: Merhawi Misgina Bayre.
Advisors: Dr. Vagelis Plevris and **Dr. Alejandro Jiménez Rios.**
Degree: Master thesis.
Institution: Oslo Metropolitan University, Norway.

13.   *Academic Leadership Experience*

2022-Present: MSCA Grant Preparation Coaching.
Activities: As a successful applicant of the competitive MSCA Individual Fellowship grant scheme, I have provided advice and guidance to people interested in preparing a competitive proposal to get funding from the European Union.

2013-Present: Academic Career Path Coaching.
Activities: Based on my personal experience, I have provided advice and guidance to people interested in pursuing an academic career in terms of scholarship and grant schemes applications.

14.   *Academic Administration Experience*

2022-Present: Administrator of the Official Website of the Structural Engineering Research Group (SERG) at the Department of Built Environment (DBE), Faculty of Technology, Art, and Design (TDK).
Institution: Oslo Metropolitan University, Norway.
URL: https://uni.oslomet.no/serg/

2016-2019: Exams Invigilator.
Institution: Trinity College Dublin, Ireland.
Description: Ensuring that examinations commence, continue, and conclude in an orderly and timely manner, and that students are kept under constant and effective supervision throughout an examination.

15.   *Editorial Work*

2023:	Leading Editor.
Journal:	Frontiers in Built Environment.
Research Topic:	Methods and Applications in Computational Methods in Structural Engineering.

2023:	Co-Editor.
Journal:	Sensors.
Special Issue:	Fault Detection, Diagnosis and Maintenance on Intelligent Transportation System.

Reviewer in scientific journals:

- **Construction and Building Materials,** Elsevier.
- **MethodsX**, Elsevier.
- **Frontiers in Built Environment,** Frontiers.
- **Proceedings of the Institution of Civil Engineers - Bridge Engineering,** ICE.
- **Proceedings of the Institution of Civil Engineers – Smart Infrastructure and Construction,** ICE.
- **Stochastic Environmental Research and Risk Assessment,** Springer.
- **IEEE Transactions on Instrumentation and Measurement**, IEEE.
- **Mathematical Problems in Engineering,** Hindawi.
- **Advances in Civil Engineering,** Hindawi.
- **International Journal of Science and Technology,** Scientia Iranica.
- **Applied Sciences,** MDPI.
- **Buildings**, MDPI.
- **Electronic Journal of Structural Engineering**, EJSEI.

Reviewer for scientific book chapters:

2023:	Reviewer.
Book:	Handbook of Research on Artificial Intelligence and Machine Learning in Civil Engineering.
Publisher:	IGI Global.

2022:	Reviewer.
Book:	Handbook of Research on Artificial Intelligence and Machine Learning in Civil Engineering.
Publisher:	IGI Global.

16.   Mini-Symposia Organizer and Participation in Conference Committees

2023:	Scientific Committee Member
Conference:	2nd International conference on civil infrastructure and construction (CIC).

2023:	MS23: Novel data-driven approaches in modelling, assessment, inspection, repairing, strengthening and management of structures.
Conference:	9th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN).
Co-Organizers:	Vagelis Plevris (Qatar University, Qatar)
	Alejandro Jiménez Rios (Oslo Metropolitan University, Norway)
	German Solorzano (Oslo Metropolitan University, Norway)
	Mohamed El Amine Ben Seghier (Institute of Surface Science, Germany).

2023:	MS3: Advances in soft computing and optimization methods in engineering.
Conference:	15th International Conference on Evolutionary and Deterministic Methods for Design, Optimization and Control (EUROGEN).
Co-Organizers:	Vagelis Plevris (Qatar University, Qatar)
	German Solorzano (Oslo Metropolitan University, Norway)
	Sadjad Gharehbaghi (Sharif University of Technology, Iran)
	Alejandro Jiménez Rios (Oslo Metropolitan University, Norway)

17. Scientific and professional memberships

2023 - Present International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM).

2022 – Present: International Association for Bridge and Structural Engineering (IABSE), Task Group 5.8: Resilience of existing structures.

2020 – Present: Colegio de Ingenieros Civiles del Estado de Jalisco, Structural Engineering Technical Session

2019 - Present: International Association for Bridge Maintenance and Safety (IABMAS).

2019 - Present: International Network for Traditional Building, Architecture and Urbanism (INTBAU).

2019 - Present: European Architectural History Network (EAHN).

2018 - 2020: Earth Building UK and Ireland (EBUKI).

2017 - 2020: Engineers Ireland (EI).

18. Participation per invitation to scientific seminars/conferences

2021: Mechanical Properties of Existing Cob Walls.
Event: NET+WORKING BASEhabitat Hybrid Summer School.
University: University of Art and Design Linz, Austria.

2021: Conservation of Earthen Vernacular Buildings with an emphasis on minor destructive tests (MDT) and cob mechanical properties.
Event: Ruins to Riches, Revive, Repurpose, Reimagine Our Traditional Buildings.
Institutions: Ulster Architectural Heritage, Armagh City Banbridge & Craigavon and the Department for Communities, UK.

19. Other Education

Summer schools:

2019: Conservation Without Frontiers International Summer School.
Topic: Survival & Revival: Living Towns and Villages in Cavan and Fermanagh.
Institutions: Ulster Architectural Heritage and Irish Georgian Society, Ireland.

2018: BASEhabitat International Summer School on Earthen and Bamboo Construction.
Topic: Practical workshops in building with earth and bamboo, theory classes on sustainable architecture and networking with people from all around the globe.
University: University of Linz, Austria.

Research oriented:

2023: Research Design.
Awarded by: Elsevier Researcher Academy.
Description: Identifying research gaps, advancing research evaluation strategies.

2022: IOP Peer Review Excellence.
Awarded by: IOP Publishing.
Description: A first-of-its-kind peer review certification programme, Peer Review Excellence: IOP training and certification is co-delivered by top-level physicists and offers a blend of online learning and hands-on peer review experience. Achieving '*IOP trusted reviewer*' status demonstrates an exceptionally high level of peer review competency.

2022: Book writing.
Awarded by: Researcher Academy, Elsevier.
Description: Why you should publish a book, advice on writing a compelling proposal, ideas for promoting your work.

2022:	Technical writing skills.
Awarded by:	Researcher Academy, Elsevier.
Description:	Practical advice to get you started, guidance on using the system, some golden rules, and common mistakes.

2022:	Writing skills.
Awarded by:	Researcher Academy, Elsevier.
Description:	Information on common writing mistakes, advice on how to avoid those errors, a guide to correct manuscript language.

2022:	Fundamentals of manuscript preparation.
Awarded by:	Researcher Academy, Elsevier.
Description:	An introduction to the publishing process, insights into how to build an article, top tips for writing a great abstract.

2022:	Research collaborations.
Awarded by:	Researcher Academy, Elsevier.
Description:	Advice on how collaborate with industry, guidance on making research collaborations work, an introduction to the importance of collaborations.

2022:	Research data management.
Awarded by:	Researcher Academy, Elsevier.
Description:	Why data sharing is so important, an introduction to data management plans, information about the sharing solutions on offer.

2021:	Research funding.
Awarded by:	Researcher Academy, Elsevier.
Description:	Advice from experts on funding, guidance on writing a great application, an introduction to metrics.

2019:	Certified Peer Reviewer Course.
Awarded by:	Researcher Academy, Elsevier.
Description:	Understanding of the peer review process, advice on writing a helpful peer review report, advice on handling ethical issues concerning peer review.

Completed massive online open courses:

- Getting Started with Mentimeter: Beginner's Course, Mentimeter Academy, Sweden.
- Co-Creation for Policymakers: An Introductory Course, Politecnico di Milano, Italy.
- Preserving Norwegian stave churches, National Technical Norwegian University, Norway.
- The art and science of searching in systematic reviews, National University of Singapore, Singapore.
- Deep learning with TensorFlow, IBM, USA.
- Web applications and command-line tools for data engineering, Duke University, USA.
- Scripting with Python and SQL, Duke University, USA.
- Python and Pandas for data engineering, Duke University, USA.
- Linux and Bash for data engineering, Duke University, USA.
- HTML, CSS, and JavaScript for Web Developers, Johns Hopkins University, USA.
- Machine learning, University of Sandford, USA.
- Construire en terre crue aujourd'hui, Amaco, France.
- Introduction to Python, Microsoft, USA.
- Roman architecture, Yale University, USA.
- The ancient Greeks, Wesleyan University, USA.
- Rome, University of Reading, UK.
- Cultural heritage in transformation, RWTH Aachen University, Germany.
- Arts and heritage management, Bocconi University, Italy.
- Next generation infrastructures, TU Delft, Netherlands.
- The art of structures, Polytechnic University of Lausanne, Switzerland.

- Future smart cities, Swiss Federal Institute of Technology in Zurich, Switzerland.

# 20.	Professional Experience

01/02/2020 - 31/12/2020:	Structural Engineer and leader of R&I.
Company:	Xtructuras Ingenieria, Mexico.
Activities:	Modelling, analysing, designing, and detailing of steel, concrete, and masonry buildings. Working in and coordinating teams, liaising with architects and clients to ensure the completion and success of projects on time and within budget. Research and implementation of SOA BIM software and working methodologies.

01/09/2014 - 31/08/2015:	Structural Engineer.
Company:	ALBA Proyecto Estructural, Mexico.
Activities:	Modelling, analysing, designing, and detailing of steel, concrete, and masonry buildings. Working in and coordinating teams, liaising with architects and clients to ensure the completion and success of projects on time and within budget.

01/08/2014 - 31/08/2015:	Structural Engineer.
Company:	Ceromotion, Mexico.
Activities:	Modelling, analysing, designing, and detailing of steel, concrete, and masonry buildings.

# 21.	Professional Certificates

2015:	Certificate on the Analysis and Design of Post-Tensioned Buildings.
Institution:	ADAPT Professional Training Institute.
Description:	Three-day intensive educational course on the analysis and design of post-tensioned buildings.

# 22.	Volunteering

2013-2014:	TECHO Building Volunteer.
NGO:	TECHO.
Activities:	Building emergency houses for families in need.

# 23.	Skills

Leadership:

- Effective communication, task prioritizing, time management, attention to detail, problem-solving, relationship-building, conflict resolution and delegation.

Informatic:

- Skills with structural engineering design software: OpenSees, SAP2000, ETABS, SAFE, ANSYS, ABAQUS, AutoCAD, Revit, Robot, Advance Steel, FormIt, SeismoSignal, Prodisis, Sasid, ALMA.
- Skills with statistical software: Minitab.
- Skills with bibliometric software: VOSviewer.
- Skills with programming languages: MATLAB, Python, VBA, XML, HTML, CSS, JavaScript, SQL.
- Skills with developer software: VSCode, Spyder, Vim, Git, Docker, Windows Terminal, Anaconda.
- Skills with other software: Word, Excel, PowerPoint, Outlook, Project, Visio, Survey Monkey, Prezi, EndNote, LaTex, Mendeley, JabRef, Paraview, GIMP, Inkscape, kdenlive, LibreOffice, Mentimeter.

Languages:

- Spanish: Mother tongue.
- English: Advanced.
- French: Intermediate.
- Italian: Beginner.
- Norwegian: Beginner