

## CURRICULUM VITAE (CVA)

### Part A. PERSONAL INFORMATION

CV date

24/10/2022

First name	José Miguel		
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Gender	Male	Birth	23/01/1975
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### A.1. Current position

Position	Professor (Catedrático de Universidad)		
Initial date	18/12/2018		
Institution	Universitat Politècnica de València - UPV		
Department/Center	ICITECH - Instituto de Ciencia y Tecnología del Hormigón		
Country	Spain	Teleph. number	96 387 77 00
Key words	Failures; Assessment; Monitoring; Progressive collapse; Robustness		

### A.2. Previous positions

Period	Position / Institution
2012 – to date	Deputy CTO and founder / CALSENS spin-off company
2011 – 2018	Associate Professor (Titular de Universidad) / UPV
2008 – 2011	Assistant Professor (Contratado Doctor) / UPV
2004 – 2011	CEO and founder / MCA Engineers
2005 – 2008	Research Fellow (Ayudante & Ayudante Doctor) / UPV
2003 – 2005	Structural Engineer / Vielca Engineers
2000 – 2003	Structural Engineer / CYPE Engineers

### A.3. Education

PhD/Degree	University	Year
PhD Construction Engineering	Universitat Politècnica de València	2008
Civil Engineer (Ingeniero de Caminos)	Universitat Politècnica de València	2000

### Part B. CV SUMMARY

I am the group leader of *Building Resilient* ([website](#) and [video](#)), an ICITECH's research group at the *Universitat Politècnica de València – UPV*. My research is carried out in the structural engineering field and has always been oriented towards **improving the resilience of buildings and bridges**. The areas in which I work are: 1) **structural assessment**, and 2) **structural robustness**. I am an experimental researcher and my work has always been associated with ambitious experimental campaigns, including many on full-scale structures (Fig.1). I combine **basic** and **applied research**, with a high degree of **transfer to industry**.

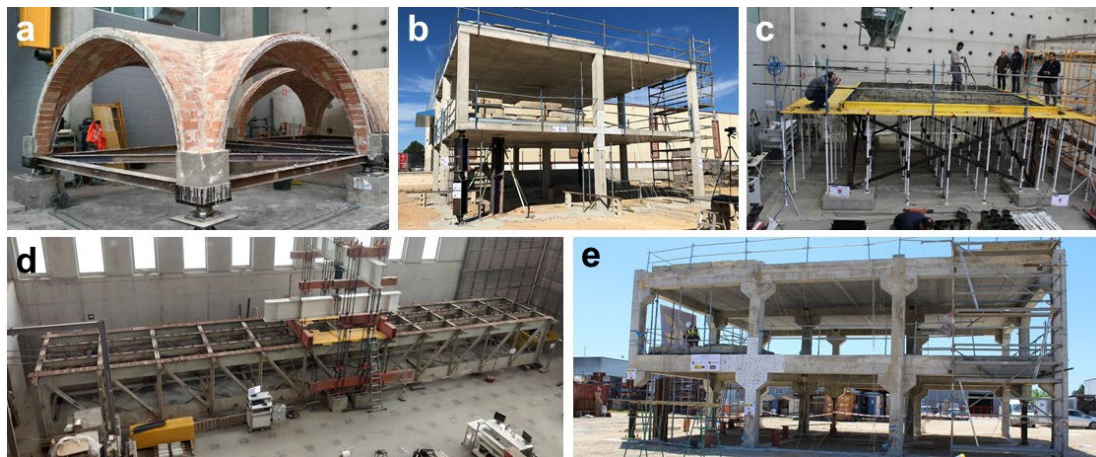


Fig. 1. Experimental tests on full-scale specimens: a) Timbrel cross-vault; b) Flat slab RC building structure; c) Shoring of a RC building structure; d) Steel riveted railway bridge; e) Precast building structure

**Structural assessment.** Here, I have worked on: a) Structural Health Monitoring; and b) the design, production, implementation and decision-making with fibre optic sensors. I have a patent for a new fibre optic sensor that can obtain much more precise measurements than its competitors. I have also directed a research project that involved monitoring full-scale timber cross vaults subjected to abnormal events (Fig. 1a). Another relevant research project involved fatigue tests carried out on a real bridge span. This work allowed defining and implementing the monitoring strategy for three steel riveted railway bridges. I transfer the results obtained in this research area to society through the *Calsens* spin-off company ([website](#)).

**Progressive collapse and robustness.** Here, I focus on: a) tests on full-scale buildings (Fig. 1b), which have provided an understanding of the alternative load paths that become active after the sudden failure of corner columns; b) robustness of temporary shoring structures and buildings under construction (Fig. 1c), which led to the development and putting on the market of novel “structural fuses” for shoring systems; c) the first study in the world involving the ambitious testing of the robustness of a 21m span steel riveted railway bridge (Fig. 1d); and d) the work currently being carried out involving the sudden removal of selected columns from a specifically built precast concrete building structure (Fig. 1e), with the aim of contributing to improving the robustness of this structural typology.

I can cite the following as some of the **most important merits or contributions** during my career as a researcher:

- 1) **ERC Consolidator Grant 2020.** I was recently awarded a €2,5 million *Consolidator Grant* from the *European Research Council (ERC)*, the premiere European funding organisation for excellent frontier research. This is the first grant of this type ever awarded in the structural engineering field. The work will involve developing a novel fuse-based segmentation design approach to arrest the propagation of failures in building structures.
- 2) **Construction and Building Materials.** I am the Senior Editor of *Construction and Building Materials*, one of the leading journals in its field (indexed in the JCR; Q1; 1st decile). My contract with the *Elsevier* publishing house includes decisions on the possible publication of 750 articles a year at an annual fee of €12,300. At various times I was the journal's youngest Board Member (2011) and Editor (2017).
- 3) **Calsens (UPV spin-off company).** I am a partner-founder of *Calsens*, which is involved in monitoring structures, structural assessment and decision making. By means of *Calsens* I transfer to society the results obtained in my research area “structural assessment”. *Calsens* is having a growing impact on the industrial sector, as shown by its annual turnover which was more than €1.5 million in 2021.

My teaching duties involve giving lectures at the *Civil Engineering School* and the *Department of Construction Engineering* at the *UPV*. The high quality of my teaching places me above the 99<sup>th</sup> percentile of all the *UPV*'s lecturers according to the Teaching Activity Index, based on the *ANECA Docentia Program*.

## Part C. RELEVANT MERITS

### C.1. Publications

Selection of **10 recent articles** in high-impact journals (out of a total of more than 80):

- 1) Caredda, G., Porcu, M.C., Buitrago, M., Bertolesi, E., Adam, J.M. (2022). Analysing local failure scenarios to assess the robustness of steel truss-type bridges. *Engineering Structures*, 262, 114341
- 2) Parisi, F., Mangini, A.M., Fanti, M.P., Adam, J.M. (2022). Automated location of steel truss bridge damage using machine learning and raw strain sensor data. *Automation in Construction*, 138, 104249.
- 3) Bertolesi, E., Buitrago, M., Adam, J.M., Calderón, P.A. (2021). Fatigue assessment of steel riveted railway bridges: Full-scale tests and analytical approach. *Journal of Constructional Steel Research*, 182, 106664.
- 4) Garzón-Roca, J., Sagaseta, J., Buitrago, M., Adam, J.M. (2021). Dynamic punching assessment of edge columns after sudden corner column removal. *ACI Structural Journal*, 118(2), 299-311.
- 5) Buitrago, M., Bertolesi, E., Calderón, P.A., Adam, J.M. (2021). Robustness of steel truss bridges: Laboratory testing of a full-scale 21-metre bridge span. *Structures*, 29, 691-700.

- 6) Buitrago, M., Bertolesi, E., Sagaseta, J., Calderón, P.A., Adam, J.M. (2021). Robustness of RC building structures with infill masonry walls: Tests on a purpose-built structure. *Engineering Structures*, 226, 111384.
- 7) Adam, J.M., Buitrago, M., Bertolesi, E., Sagaseta, J., Moragues, J.J. (2020). Dynamic performance of a real-scale reinforced concrete building test under a corner-column scenario. *Engineering Structures*, 210, 110414.
- 8) Floris, I., Madrigal, J., Sales, S., Calderón, P.A., Adam, J.M. (2020). Twisting measurement and compensation of optical shape sensor based on spun multicore fiber. *Mechanical Systems and Signal Processing*, 140, 106700.
- 9) Buitrago, M., Sagaseta, J., Adam, J.M. (2020). Avoiding failures during building construction using structural fuses as load limiters on temporary shoring structures. *Engineering Structures*, 204, 109906.
- 10) Sangiorgio, V., Uva, G., Adam, J.M., Scarcelli, L. (2020). Failure analysis of reinforced concrete elevated storage tanks. *Engineering Failure Analysis*, 115, 104637.

## C.2. Conferences and Workshops

**Editor-organiser of 6 international conferences** (total attendees over 1,000):

- 2019 *3rd Edition of the International Conference on Recent Advances in Nonlinear Models - Design and Rehabilitation of Structures*. Coimbra, Portugal
- 2017 *2nd Edition of the International Conference on Recent Advances in Nonlinear Models - Design and Rehabilitation of Structures*. Coimbra, Portugal
- 2017 *The Ninth International Structural Engineering and Construction Conference*. Valencia, Spain
- 2015 *International Conference on Recent Advances in Rehabilitation and Sustainability of Structures*. Azores, Portugal
- 2010 *The Seventh International Conference on Engineering Computational Technology*. Valencia, Spain
- 2010 *The Tenth International Conference on Computational Structures Technology*. Valencia, Spain

**14 Invited-Keynote Lectures at major Conferences and Symposia** organised by recognised prestigious international bodies. Selection of conference series and organising bodies: *Civil-Comp Press*, *Wessex Institute*, *SAHC*, *ECCOMAS*, *REHABEND* and *SEMC*.

**21 Invited Workshops at Leading Institutions** as, for example: *TU Berlin*, *Università degli Studi di Firenze*, *Cardiff University*, *Universidade de Coimbra* and *Politecnico di Bari*.

## C.3. Research Projects and Grants

Participation in a total of **19 research projects** funded through competitive calls (total worth €7.5 million). **Principal Investigator (PI)** in **9 research projects** (total worth over €3.5 million). Selection of **five recent-ongoing projects** funded through highly competitive calls in which I figure as PI:

- 2022 – 2026 Endure – Fuse-based segmentation design: Avoiding failure propagation in building structures. Funded by: *European Research Council* (ERC Consolidator Grant 2020). Budget: €2,509,375. Role: Principal Investigator. Success rate of the call: ~13%
- 2022 – 2025 Pont3 – Anticipating failure propagation of ageing bridges through a cost-effective interdisciplinary approach. Funded by: *Spanish Ministry of Science and Innovation*. Total budget: €424,468. Role: Project coordinator. Success rate of the call: ~40%
- 2020 – 2022 MANTRED – Maintenance and Conservation of Built Heritage. Funded by: *Spanish Ministry of Science, Innovation and Universities*. Budget: €23,100. Role: Principal Investigator. Success rate of the call: ~40%
- 2018 – 2022 PREBUST – Progressive collapse and robustness of precast concrete building structures. Funded by: *Spanish Ministry of Economy, Industry and Competitiveness*. Budget: €193,000. Role: Principal Investigator. Success rate of the call: ~40%
- 2017 – 2019 Improving the resilience of buildings against extreme events: The challenge of corner columns. Funded by: *BBVA Foundation* (Leonardo Grant). Budget: €35,000. Role: Principal Investigator. Success rate of the call: ~3%



#### C.4. Contracts and Transfer to Industry

Founding partner and Deputy CTO of the **spin-off company Calsens**.

Participation in **48 R+D+i contracts** with public and private companies (**PI in 26**) for a total worth of over €5 million.

Selection of **five recent-ongoing R+D+i contracts** in which I figure as PI, or have carried out at *Calsens* under my supervision:

- 2022 – 2023 Monitoring and loading tests on Santo Ovidio Viaduct. Metro do Porto. Funded by: APPLUS. Budget: €98,940
- 2021 – 2023 Monitoring and structural assessment of Building 3Q22. Alicante Port. Funded by: FCC Construcción S.A. Budget: €96,600
- 2019 – 2024 Consulting services for the design and monitoring of the Santa Ana Viaduct FGV Line Nº 9 over the Quisi Gorge. Funded by: Valencian Railway Agency (FGV). Budget: €464,530
- 2020 – 2021 Robustness tests on a RC specimen-building structure: Corner failure scenarios in buildings with infill walls. Funded by: Levantina, Ingeniería y Construcción S.L. (LIC). Budget: €36,230
- 2020 – 2021 Fatigue testing of the FGV bridge over the Quisi Gorge in Benissa, Alicante. Funded by: FCC Construcción S.A. Budget: €144,837

#### C.5. Editor and Editorial Board Member in High-impact Journals (Indexed in the JCR)

- 2019 – to date **Senior Editor**, *Construction and Building Materials* (Q1; position 11/134)
- 2016 – to date **Associate Editor**, *J. Perform. of Construct. Facilities* (Q3; position 34/63)
- 2016 – to date **Editorial Board**, *Proc. of the ICE – Struct. and Build.* (Q4; position 49/63)
- 2010 – to date **Editorial Board**, *Engineering Structures* (Q1; position 19/134)
- 2019 – 2021 **Editorial Board**, *Applied Sciences* (Q2; position 32/91)
- 2017 – 2019 **Editor**, *Construction and Building Materials* (Q1; position 11/134)
- 2011 – 2017 **Editorial Board**, *Construction and Building Materials* (Q1; position 11/134)
- 2010 – 2015 **Editorial Board**, *Proc. of the ICE – Civil Engineering* (Q4; position 116/134)

**Guest Editor** of 12 special issues in: *Eng. Struct.* (3), *Constr. Build. Mater.* (2), *Eng. Fail. Anal.* (1), *J. Perform. Constr. Fac.* (1), *Adv. Eng. Softw.* (2), *Comput. Struct.* (2), *Structures* (1)

#### C.6. Patents

Load limiters in shores to improve shore safety and reduce costs (2018). Marketed by *Alsina Formworks*.

STC software for calculating shoring of RC structures (2009). Marketed by *Alsina Formworks*.

Optical structural monitoring sensor (2008). Marketed by *Calsens*.

#### C.7. Supervision of Graduate Students and Postdoctoral Fellows

- 2020 – to date **6 PhD Theses (ongoing)**: M.L. Gerbaudo (2022-to date), L. Marín (2022-to date), D. Cetina (2022-to date), G. Caredda (2022-to date), A. Ponce (2021-to date), G. Shahnazi (2020-to date)
- 2016 – to date **8 Postdoctoral Fellows**: A. Setiawan (2022-to date), A. Sánchez (2022-to date), N. Makoon (2021-to date), M. Buitrago (2018-to date), E. Mezquida (2021-2022), V. Sangiorgio (2020-2021), E. Bertolesi (2018-2020), P. Rinaudo (2017-2018)
- 2010 – to date **10 PhD Theses (completed)**: F. Parisi (2019-2022), M. Guisasola (2016-2022), A. Nettis (2018-2021), E. Giordano (2017-2021), J. Lozano (2016-2021), I. Floris (2017-2020), V. Sangiorgio (2016-2019), M. Buitrago (2015-2018), J.D. Moreno (2013-2016), J. Garzón-Roca (2010-2013)
- 2005 – to date **92 Master Theses**: *M. Civil Engineering* and *M. Concrete Engineering*, UPV

#### C8. Major Collaborations

Ongoing collaborations with: **Prof. M. Chryssanthopoulos** (*University of Surrey*), **Dr. F. Parisi** (*Università degli Studi di Napoli Federico II*), **Dr. B. Riveiro** (*Universidade Vigo*), **Dr. J. Sagaseta** (*University of Surrey*), **Prof. B. Li** (*Nanyang Technological University*), **Dr. L. Pelà** (*Universitat Politècnica de Catalunya*), **Prof. P. Roca** (*Universitat Politècnica de Catalunya*), **Prof. G. Uva** (*Politecnico di Bari*), **Dr. E. Bertolesi** (*Brunel University London*), **Prof. F. Clementi** (*Università Politecnica delle Marche*) and **Prof. H. Varum** (*Universidade do Porto*).