



# Al Mouayed Bellah Nafeh

Risk Engineer, Researcher



European Centre for Training and Research in Earthquake Engineering,  
Via Adolfo Ferrata 1, Pavia, 27100, Italy  
+39 333 77 999 63 [mouayed.nafeh@iusspavia.it](mailto:mouayed.nafeh@iusspavia.it)

## Date / Place of birth

30/04/1993, Tripoli,  
Lebanon

## Nationality

Lebanese

## Driving license

B

## Skills

Python

MATLAB

OpenSees

OpenQuake

QGIS

CSi CAD Suite

Microsoft Office

Performance Assessment  
Calculation Tool (PACT)

Deep-Learning Frameworks  
(PyTorch, Keras,  
TensorFlow)

R

## Languages

Arabic

English

French

Italian

## Profile

Al Mouayed Bellah Nafeh (1993) holds a B.Sc. in Civil and Environmental Engineering (2015) and a M.Sc. in Earthquake Engineering and Engineering Seismology (2017) and is currently a Doctoral Student in Understanding and Managing Extremes at IUSS Pavia. Primary research interests include typology-specific and regional seismic vulnerability, risk and loss assessment of building-specific and building portfolios; derivation of efficient engineering demand parameters to account for damage accumulation due to earthquake sequences;

For more info please visit: [almouayedbellah-nafeh.github.io](https://almouayedbellah-nafeh.github.io)

## Employment History

### Post-Doc Researcher, European Centre for Training and Research in Earthquake Engineering, Pavia

June 2023

*Project:* ENFRAG (Enhancing State-Dependent Fragility through Experimentally Validated Energy-Based Approaches), funded by the "ERIES" (Engineering Research Infrastructures for European Synergies) project and the European Commission;

- Development and calibration of archetype models accounting for the in-plane and out-of-plane interaction of masonry infill panels;
- Derivation of an efficient energy-based engineering demand parameter to account for damage accumulation in building typologies due to earthquake sequences;

### Research Associate, IUSS Pavia, Pavia, Italy

February 2021 – May 2021

*Project:* ROSSINI (Risk-Aware Navigation in Industrial Plants at Risk of NaTech Accidents), funded by INAIL (Italian national institute for workplace insurance) and “Dipartimenti di Eccellenza”, funded by the Italian Ministry of Education, University and Research at IUSS Pavia;

- Derivation of fragility curves for existing reinforced concrete structures using extensive and simplified methods;
- Design, implementation and testing of a prototype system for risk-aware navigation to manage and mitigate seismic risk in industrial plants at risk of NaTech accidents;

## Hobbies

Ice hockey, tennis, chess, woodworking, guitar and songwriting, photography and photo-editing, gardening;

## Research Associate, Università degli Studi di Pavia and IUSS Pavia, Pavia, Italy

September 2017 — September 2019

*Project: ReLUIS Line 7 and Dipartimenti di Eccellenza*, co-funded by the Italian Civil Protection Agency and the Italian Ministry of Education, University and Research at IUSS Pavia;

- Development of simplified methods for the seismic performance assessment of existing reinforced concrete Italian buildings with masonry infills as non-structural elements;
- Development of displacement-based approaches for the direct loss assessment of building typologies;

*Project: ITERATE* (Improved Tools for Disaster Risk Mitigation in Algeria), co-funded by the European Union's Directorate General ECHO – Humanitarian Aid and Civil Protection

- Development of a social vulnerability model for northern Algeria for the integrated seismic risk assessment;

## Education

### Doctor of Philosophy in Earthquake Engineering and Engineering Seismology, Scuola Universitaria Superiore IUSS, Pavia, Italy

October 2019 — Present

### Masters in Earthquake Engineering and Engineering Seismology, Scuola Universitaria Superiore IUSS, Pavia, Italy

September 2015 — August 2017

### M. Sc. Geomechanics, Civil Engineering and Risks, Université Grenoble Alpes, Grenoble, France

September 2015 — August 2016

### B. Sc. in Civil and Environmental Engineering, University of Balamand, Kalhat, Lebanon

September 2011 — August 2015

## References

References available upon request

## List of Publications

1. Nafeh, A.M.B., O'Reilly, G.J., Simplified pushover-based seismic loss assessment methodology for existing infilled frame structures. (*Under Review*)
2. Nafeh, A.M.B., O'Reilly, G.J., Simplified pushover-based seismic risk assessment methodology for existing infilled frame structures. *Bull Earthquake Eng* 21, 2337–2368 (2023).  
<https://doi.org/10.1007/s10518-022-01600-y>

3. O'Reilly, G.J., Nafeh, A.M.B., Shahnazaryan, D., (2023) Simplified tools for the risk assessment and classification of existing buildings, *Procedia Structural Integrity*, Volume 44, Pages 1744-1751, ISSN 2452-3216, <https://doi.org/10.1016/j.prostr.2023.01.223>.
4. Nafeh, A.M.B, O'Reilly, G.J., (2022) Unbiased simplified seismic fragility estimation of non-ductile infilled RC structures, *Soil Dynamics and Earthquake Engineering*, Volume 157, 2022, 107253, ISSN 0267-7261, <https://doi.org/10.1016/j.soildyn.2022.107253>
5. Nafeh, A.M.B, Beljoudi, H., Yelles, A.K, Monteiro, R. (2020), Development of a seismic social vulnerability model for northern Algeria, *International Journal of Disaster Risk Reduction*, DOI: 10.1016/j.ijdrr.2020.101821
6. O'Reilly, G.J., Monteiro, R., Nafeh, A.M.B., Sullivan, T., Calvi, G.M.(2020), Displacement-based framework for simplified seismic loss assessment, *Journal of Earthquake Engineering*, DOI: 10.1080/13632469.2020.1730272
7. Nafeh, A.M.B., O'Reilly, G.J. & Monteiro, R. Simplified seismic assessment of infilled RC frame structures. *Bull Earthquake Eng* 18, 1579–1611 (2020). <https://doi.org/10.1007/s10518-019-00758-2>

## Conferences and Seminars

### List of Proceedings

1. Nafeh, A.M.B., O'Reilly, G.J., (2023) , Towards the assessment and risk classification of existing building typologies using storey-loss functions Fragility Function Uncertainty Quantification in Infilled RC Frame Buildings, Proceedings of the 14th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP14) held in Dublin, Ireland.
2. Nafeh, A.M.B., O'Reilly, G.J., (2023) , Fragility Function Uncertainty Quantification in Infilled RC Frame Buildings, Proceedings of the 9th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN2023) held in Athens, Greece.
3. O'Reilly, G.J., Nafeh, A.M.B, Shahnazaryan, D., , (2022) Simplified tools for the risk assessment and classification of existing buildings, Proceedings of the ANIDIS XIX Conference on Seismic Engineering in Italy held in Torino, Italy.
4. O'Reilly, G.J., Nafeh, A.M.B., (2022) , Towards improved response quantification of existing infilled RC frames, Proceedings of the 3rd European Conference on Earthquake Engineering and Seismology held in Bucharest, Romania.
5. Nafeh, A.M.B., O'Reilly, G.J., (2022) , Simplified seismic risk assessment of non-ductile infilled RC frame buildings, Proceedings of the 3rd European Conference on Earthquake Engineering and Seismology held in Bucharest, Romania.
6. O'Reilly, G.J., Shahnazaryan, D., Nafeh, A.M.B, Ozsarac, V., (2022) Utilization of a sensor array for the risk-aware navigation in industrial plants at risk of NaTech accidents, Proceedings of the ASME 2022 Pressure Vessels & Piping Conference held in Las Vegas, USA.

7. Nafeh, A.M.B., O'Reilly, G.J., (2021) Accurate collapse capacity quantification for infilled RC frame buildings, Proceedings of the 8th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering held in Athens, Greece.
8. Nafeh, A.M.B, O'Reilly G.J, Monteiro, R. (2019), Simplified seismic assessment of infilled RC structures, Proceedings of the 17th World Conference on Earthquake Engineering held in Sendai, Japan.

### **YouTube Recorded Presentations**

1. [ROSE Centre Seminar] Simplified approaches for the risk assessment of non-ductile infilled RC structures  
[https://www.youtube.com/watch?v=mjh\\_JaIeZgw&t=330s&ab\\_channel=ROSECentre](https://www.youtube.com/watch?v=mjh_JaIeZgw&t=330s&ab_channel=ROSECentre)
2. [COMPDYN2021] Accurate collapse capacity quantification for infilled RC frame buildings  
[https://www.youtube.com/watch?v=2krVbWi2U9c&t=1s&ab\\_channel=ROSECentre](https://www.youtube.com/watch?v=2krVbWi2U9c&t=1s&ab_channel=ROSECentre)
3. [17WCEE] Simplified seismic assessment of infilled reinforced concrete frame structures  
[https://www.youtube.com/watch?v=i0vAq5z5SIw&ab\\_channel=ROSECentre](https://www.youtube.com/watch?v=i0vAq5z5SIw&ab_channel=ROSECentre)