Dr. Eng. AHMED ELYAMANI

Associate Professor of Architectural and Structural Restoration of Historic Buildings
Cairo University, Faculty of Archaeology, Architectural Conservation Department

EDUCATION

- **PhD in Structural Engineering** Department of Construction Engineering, Technical University of Catalonia, Barcelona, Spain, 2015
- **MSc in Structural Engineering,** Joint European Double Degree from University of Padova (Padova, Italy) and Technical University of Catalonia (Barcelona, Spain), 2009
- **Diploma in Restoration of Monuments,** Faculty of Archaeology, Cairo University, 2007
- **BSc in Structural Engineering,** Faculty of Engineering, Cairo University, Egypt, 2004

MEMBERSHIP

- Egyptian Syndicate of Engineers
- Saudi Council of Engineers
- Scientific Committee of the International Conference on Structural Analysis of Historical Constructions, 2025 – 2023 and 2021

SUMMARY OF CAPABILITIES

Dr. Ahmed Elyamani is a leading expert in the structural restoration of built heritage including study and execution with over 20 years of professional and academic experience. He holds a BSc in Structural Engineering (2004) and a Diploma in Monument Restoration (2007), both from Cairo University (Egypt). He earned an MSc (2009, Italy-Spain) and a PhD (2015, Spain), both centered on applying structural engineering principles to the restoration of built heritage.

He has published over 35 articles in international conferences and journals, specializing in the restoration of historical structures and sites. In 2018, he received the prestigious "Scientific Excellence of Young Arab Archaeologists" award. Dr. Elyamani is currently an Associate Professor (on leave) in the Architectural Conservation Department at Cairo University (Egypt).

Dr. Elyamani's extensive portfolio includes contributions to the restoration of over 200 historical structures across Egypt, Saudi Arabia, Morocco, Italy, and Spain. His expertise spans a wide range of tasks, from developing comprehensive restoration studies and execution documents to supervising construction, preparing technical and financial proposals, and conducting structural assessment and solving problematic execution cases. His notable projects include the first boutique hotels in Historic Jeddah (Al Jokhdar, Al Rayas, and Kidwan), the Baron Empain Palace (Egypt), Mallorca Cathedral (Spain), the Ruins of Fustat City (Egypt), and the Royal Historic Palaces (Central Riyadh).

EMPLOYMENT AND EXPERIENCE RECORD

APR. 2022 – TO DATE, ARCHITECTURAL CONSERVATION DEPARTMENT, FACULTY OF ARCHAEOLOGY, CAIRO UNIVERSITY, Egypt
Associate professor

JAN. 2016 – APR. 2022, ARCHAEOLOGICAL CONSERVATION DEPARTMENT, FACULTY OF ARCHAEOLOGY, CAIRO UNIVERSITY, Egypt
Assistant Professor
Teaching undergraduate and postgraduate courses including: Preparation of restoration projects; Properties and testing of materials; Intervention techniques; Shoring and securing of historical structures; Structural analysis of historical structures; Conservation of historical timber structures; Quantities takeoff; Soil mechanics and foundations; Management of historical sites;

DEC. 2011 – JAN. 2016 ARCHAEOLOGICAL CONSERVATION DEPARTMENT, FACULTY OF ARCHAEOLOGY, CAIRO UNIVERSITY, Egypt
Assistant Lecturer

APR. 2005 – DEC. 2011 ARCHAEOLOGICAL CONSERVATION DEPARTMENT, FACULTY OF ARCHAEOLOGY, CAIRO UNIVERSITY, Egypt
Teaching Assistant

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SEP. 2019 – TO DATE, Saudi Arabia
Expert and Project Manager in structural restoration of historic buildings

SEP. 2017 – AUG. 2019, ENGINEERING CENTER FOR ARCHAEOLOGY AND ENVIRONMENT, FACULTY OF ENGINEERING, CAIRO UNIVERSITY, Egypt
Consultant of Structural Conservation of Historical Structures
Supervising the implementation of the structural conservation works of the two historical structures of El-Mahli Mosque (Rashid) and the Jewish Temple (Alexandria).

MAY 2019 – AUG. 2019, THE CONSERVATION CENTER FOR ARCHAEOLOGICAL AND HISTORICAL BUILDINGS AND MUSEUM ARTIFACTS FACULTY OF ARCHAEOLOGY, CAIRO UNIVERSITY, Egypt
Project Engineer
Supervising maintenance intervention works of five historical structures in Historic Cairo, coordinating between the contractor and the owner, revising and approving contractor payment requests and method of statement of restoration works.

MISR UNIVERSITY FOR SCIENCE AND TECHNOLOGY (MUST), Egypt
Lecturer of the course of "Survey and Architectural Drawings" (REST 221) during the second term of the academic years 2015/2016, 2016/2017, 2017/2018 and 2018/2019.

CAIRO UNIVERSITY, FACULTY OF ENGINEERING, ARCHITECTURAL ENGINEERING DEPARTMENT, Egypt
Lecturer of the course of "Structural Systems and Design" (CVEN 302) in the second term of the academic year 2017/2018.

MAY 15TH HIGHER INSTITUTE OF CIVIL AND ARCHITECTURAL ENGINEERING, Egypt
Teaching Assistant, teaching "Structural Analysis", 1st year Civil Engineering Department, First semester of 2004/2005.

Researcher in an international research project (05/2021-12/2024)

- Senior researcher in the project "A fund-allocation optimization framework for conserving Cairo's historic structures considering physical and socioeconomic benefits", budget of EGP 572,600.
- International research team from Egypt and Canada
- Funded by Academy of Scientific Research and Technology
- I am the structural restoration expert for the historic buildings in the project that reach 40 building in five districts in Historic Cairo.

Co-Investigator in an international research project (03/2019-12/2022)

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- Co-Investigator in the project "Interdisciplinary approach for the management and conservation of UNESCO World Heritage Site of Historic Cairo. Application to Al-Ashraf Street", website https://gtr.ukri.org/projects?ref=AH%2FR00787X%2F1), budget of £202,589.
- The project includes Imperial College London (UK), Cairo University (Egypt) and Associate Partner Megawra (Egypt).
- The project aims at proposing and applying an interdisciplinary approach for the management and conservation of the UNESCO world heritage site of Historic Cairo. In order to apply and demonstrate the developed methodologies, a part of the site has been selected, namely "Al-Ashraf street". The proposed project is not meant to be solely an engineering solution for the threats faced by this street but it is intended to provide a holistic approach that could be applied in other areas in Historic Cairo and, more generally, in other archaeological sites in Egypt and in other developing countries.

Researcher in the international research project NIKER (2010-2012)

- Researcher in the project: New Integrated Knowledge based approaches to the protection of cultural heritage from Earthquake-induced Risk, acronym 'NIKER', website (www.niker.eu), budget of €3.6 million,
- The project included 18 partners (Faculties and Companies) from 12 countries (including Italy, Spain, UK, Germany, Morocco, and Egypt among others),
- It investigated the effects of earthquakes on historical constructions via extensive experimental and numerical studies and the application to several case studies,
- My specific contribution was in the work package WP9 led by Prof. Pere Roca (Technical University of Catalonia, Spain). WP9 was for the development and application of knowledge-based assessment procedures to real case studies,
- Within WP9, I participated in 1) designing and performing in-situ dynamic identification tests on the case studies of Ras Cherratine Medersa (Morocco) and Mallorca cathedral (Spain) followed by performing system identification and 3D finite element model updating of both case studies, 2) designing and installing dynamic monitoring system and seasonal Infrared (IR) thermography monitoring system in Mallorca cathedral followed by analysing the obtained data, 3) seismic assessment and intervention proposals for Mallorca cathedral, 4) writing two reports about all the investigation activities performed in the aforementioned case studies, 5) collated contributions of all partners in WP9 and issued the five reports of the work package, 6) attending Bauhaus Summer School on " Model Validation and Simulation", 6-17 August 2012 at Bauhaus-Universität Weimar, Germany and 7) attended the project meetings: mid-term meeting (Athens-Greece); 27 months meeting (Prague, Czech Republic); final meeting (Padova-Italy) and NIKER special session in SAHC 2012 conference (Wroclaw-Poland).

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Editorial Team Member of an international journal (12/2018 – to date)

Editorial Team Member of "Journal of Architectural Environment & Structural Engineering Research", published by BILINGUAL PUBLISHING CO., Singapore.

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PUBLICATIONS

- A.Y., Elghazouli, D.V., Bompa, S. A., Mourad and A. Elyamani. (2024). Seismic upgrading of shear resistance for heritage masonry using textile reinforced mortar. 18th World Conference on Earthquake Engineering, June 30th to July 5th, 2024, Milan, Italy.
- N. M. Ali, M. A. Adam, A. M. A. Kamel, A. Elyamani and S. A. Mourad (2024). Diagnostic investigation of the deteriorated building materials and the suggested conservation treatments of Al-Ashraf Khalil Mamluk mausoleum dome - Historic Cairo Egypt. Shedet, vol. 13, issue 13.
- A. Elyamani, A. Reda, M. Abdel-Hafez, S. A. Mourad and M. M. Hassan (2023). Characterization of construction materials of the historic structures in historic Cairo: a case study. International Journal of Conservation Science, 14 (2), pp. 599-616.
- A.Y., Elghazouli, D.V., Bompa, S. A., Mourad and A. Elyamani. (2023). Ultimate in-plane shear behaviour of clay brick masonry elements strengthened with TRM overlays. Bulletin of Earthquake Engineering, vol. 21, issue 13, pp. 6273–6315.
- Saad, D. A., M. M. Hassan, A. Elyamani, A. Mamdouh, S. Mourad, and T. Hegazy (2023). Prioritization of heritage buildings in Historic Cairo for restoration funding. International Journal of Advances in Structural and Geotechnical Engineering, 7 (1), pp. 20-28.
- Bakkar, A. R., Elyamani, A., El-Attar, A. G., Bompa, D. V., Elghazouli, A. Y., & Mourad, S. A. (2023). Dynamic Characterisation of a Heritage Structure with Limited Accessibility Using Ambient Vibrations. Buildings, 13(1), 192.
- Hassan, M. M., A. Elyamani, and S. A. Mourad (2022). Seismic vulnerability assessment of buildings: case study of Al Khalifa district, Fatimid Cairo. SN Applied Sciences, vol. 4, issue 11, pp. 310.
- Elghazouli, A. Y., D. V. Bompa, S. A. Mourad, and A. Elyamani (2022). Seismic Performance of Heritage Clay Brick and Lime Mortar Masonry Structures. Progresses in European Earthquake Engineering and Seismology, Cham, Springer International Publishing, pp. 225 - 244.
- Elghazouli, A. Y., D. V. Bompa, S. A. Mourad, and A. Elyamani (2022). Structural Behaviour of Clay Brick Lime Mortar Masonry Walls Under Lateral Cyclic Loading in Dry and Wet Conditions. Protection of Historical Constructions, Cham, Springer International Publishing, pp. 164 - 174, 2022.
- A. Elyamani, P. Roca, O. Caselles, and J. Clapes, (2022). Dynamic Investigation of Cultural Heritage Buildings for Seismic Safety Assessment. Handbook of Cultural Heritage Analysis, Cham, Springer International Publishing, pp. 1187 - 1220.
- Elghazouli, A. Y., D. Bompa, S. A. Mourad, and A. Elyamani (2021). Experimental in-plane cyclic response of dry and wet masonry walls incorporating lime mortar and clay bricks. 17th World Conference on

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Earthquake Engineering, September 27th to October 2nd, 2021, Sendai, Japan.

- Elghazouli, A. Y., D. V. Bompa, S. A. Mourad, and A. Elyamani (2021). In-plane lateral cyclic behaviour of lime-mortar and clay-brick masonry walls in dry and wet conditions. Bulletin of Earthquake Engineering, vol. 19, issue 13, pp. 5525 - 5563.
- Elyamani, A., Bader, N. A. A., Algohary M., and Abou El Hassan, R. (2021). Explanation of the Damage to the Royal Family's Cemetery in Historic Cairo and Examination of the Building Materials. Open Journal of Civil Engineering, vol. 11, issue 1, pp. 28-59.
- Elyamani, A. Souliman, W. Osama, H. Yaha and N. Ashraf (2020). Monumental buildings under harsh surrounding conditions: the case study of Fatima Khatun mausoleum in Historic Cairo. First International Electronic Conference of Faculty of Archaeology, Samarra University, Iraq, 1 July 2020, pp. 197-226.
- A.. Elyamani, N. M. Ali, N. Abdel-Maksoud and A. Adel (2019) "A Study on the Surroundings of Sednaoui El-Khazendar Historical Building in Khedival Cairo and Proposals for Improvement and Development", International Journal of Heritage and Musuem Studies, 1 (1), pp. 1-14.
- A. Elyamani, P. Roca, O. Caselles, and J. Clapes (2019) "Evaluation of Mallorca Cathedral seismic behavior using different analysis techniques", Mediterranean Archaeology and Archaeometry, 19 (1), pp. 41-60.
- D. A. Saad, A. Elyamani, Hassan, M. M., Mourad, S. A. (2019) "A fund-allocation optimization framework for prioritizing historic structures' conservation projects- an application to historic Cairo", CSCE 2019 Annual Conference, Laval (Greater Montreal), June 12-15, 2019.
- A. Elyamani (2018) "Re-use proposals and structural analysis of historical palaces in Egypt: the case of Baron Empain palace in Cairo", Scientific Culture, 4(1), pp. 1-27.
- A. Elyamani and P. Roca (2018) "A review on the study of historical structures using integrated investigation activities for seismic safety assessment. Part I: dynamic investigation", Scientific Culture, 4(1), pp. 29-53.
- A. Elyamani and P. Roca (2018) "A review on the study of historical structures using integrated investigation activities for seismic safety assessment. Part II: model updating and seismic assessment", Scientific Culture, 4(1), pp. 54-74.
- A. Elyamani, El-Rashidy, M. S., Abdel-Hafez, M. and Gad El-Rab, H. (2018) "A contribution to the conservation of 20th century architectural heritage in Khedival Cairo", International Journal of Conservation Science, 9(1), 55-70.
- Elyamani and P. Roca (2018) "One century of studies for the preservation of one of the largest cathedrals worldwide: A review", Scientific Culture, 4(2), pp. 1-24.
- A. Elyamani, O. Caselles, P. Roca, and J. Clapes (2018) "Integrated dynamic and thermography investigation of Mallorca cathedral", Mediterranean Archaeology and Archaeometry, 18 (1), pp. 221-236.
- O. Caselles, J. Clapes, A. Elyamani, J. Lana, C. Segui, A. Martin and P. Roca (2018) "Damage detection using Principal Component Analysis applied to temporal variation of natural frequencies", 16th European Conference on Earthquake Engineering, Thessaloniki, Greece, 18-21 June 2018.

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- A. Elyamani, O. Caselles, P. Roca, and J. Clapes (2017) "Dynamic investigation of a large historical cathedral", Structural Control and Health Monitoring, 24(3), pp. 1-25.
- A. Elyamani, P. Roca, O. Caselles, and J. Clapes (2017) "Seismic safety assessment of historical structures using updated numerical models: the case of Mallorca cathedral in Spain", Engineering Failure Analysis, 74, pp. 54-79.
- A. Elyamani and Moustafa, S. (2017) "Typical reasons of the degradation of Islamic historical structures and its surroundings and proposals for intervention: the case of queen Safiyya mosque in Cairo", 20th Conference of the General Union of the Arab Archaeologists, 11-13 November 2017, Fayoum, Egypt
- E. Salah and A. Elyamani (2017) "Employing of three dimensional virtual shows in the re-use of historical structures and sites", The First Arab Conference for Restoration and Reconstruction, Cairo, Egypt, 9-11 October 2017.
- Adel, N. Mohamed, N. Abdel-Maksoud, M. Sobhy, D. Hossam-El-Din and A. Elyamani (2017) "On the conservation and re-use of Sednaoui El-Khazender historical building in Attaba", The First Arab Conference for Restoration and Reconstruction, Cairo, Egypt, 9-11 October 2017.
- A. Elyamani (2016) "Conservation-oriented structural analysis of the spire of Barcelona cathedral", International Journal of Materials Science and Applications 5(6- 2), pp. 1-9.
- A. O. D. El-Derby and A. Elyamani (2016) "The adobe barrel vaulted structures in ancient Egypt: a study of two case studies for conservation purposes", Mediterranean Archaeology and Archaeometry, 16 (1), pp. 295-315.
- S. Moustafa, S. Anwar, D. Ashraf, S. Ramadan, and A. Elyamani (2015) "The tomb of the High Priest of Aton in the regime of King Akhenaten: description, damage and restoration works", 4th International Conference "Egypt and Mediterranean Countries Through Ages", Cairo, Egypt, 15-19 October 2015.
- O. Caselles, J. Clapes, P. Roca and A. Elyamani (2012) "Approach to seismic behavior of Mallorca Cathedral", 15th World Conference on Earthquake Engineering, 24-28 September 2012, Lisbon, Portugal.
- A. Elyamani, O. Caselles, J. Clapes and P. Roca (2012) "Assessment of dynamic behavior of Mallorca Cathedral", 8th International Conference on Structural Analysis of Historical Construction, 15-17 October 2012, Wroclaw, Poland.

COMPUTER SKILLS

Structural Engineering programs: SAP2000, spColumn, DIANA

Drawing Programs: Revit and AutoCAD

Other Computer Software: SPSS

Microsoft Office: Word, Excel and PowerPoint

LANGUAGES

Arabic, English and Spanish (Read, Write & Speak)