CURRICULUM VITAE

Medhat Elmorsy
Postdoctoral Researcher
Institute of Structural Engineering (IBK)
ETH Zurich, Zurich, Switzerland

Nationality:	Egypt	**Date of birth:**	February 27, 1993
Residence:	Zurich, Switzerland (Permit B)		
Home Address:	Wehntalerstr. 586a, 8046 Zürich, Switzerland		
Office Address:	ETH Zurich, HIL E 12.1, Stefano-Franscini-Platz 5, 8093 Zürich, Switzerland		
E-Mail:	medhat.elmorsy@ibk.baug.ethz.ch		
Phone:	+41 76 226 50 65 (cell) / +41 44 633 42 95 (office)		

EDUCATION

Doctoral Degree **2022 – 2025**
Institute of Structural Engineering, ETH Zurich
Dissertation: System-Level Uncertainty in Earthquake Engineering: Numerical Investigation and AM-Based Physical Modeling for Benchmark Data Generation
Advisor: Prof. Dr. Michalis Vassiliou

M.S. in Civil Engineering (Major: Structures) **2020 – 2021**
University of Alaska Anchorage, Anchorage, AK, USA
Thesis: Nonlinear Modeling Parameters for Beam-Column Joints in Seismic Analysis of Concrete Buildings
Advisor: Associate Prof. Wael M. Hassan
Grade: 3.85/4.00

M.S. in Structural Engineering (Part-time) **2016 – 2021**
Faculty of Engineering, Mansoura University, Egypt
Thesis: Performance-Based Seismic Assessment of Buildings with Curved Shear Walls
Advisor: Professor Mohamed Elzougiby; Associate Professor Ahmed A. Ghaleb
Grade: 3.567/4.00

B.S. (Honors) in Engineering **2011 – 2016**
Faculty of Engineering, Mansoura University, Egypt
Graduation project: Reinforced Concrete Structures
Grade: 89.72%
Ranking: 1 (out of ~750 civil engineering students)

WORK EXPERIENCE

- **Structural Design Engineer (Part-time), Hamed Askar Consulting** **2016 – 2018**
  - Designed residential buildings, water treatment plant tanks, and various other structures

- **Lecturer (Part-time), Mansoura University, Egypt** **2017 – 2019 & 2021 – 2021**
  - Conducted tutorials for four undergraduate classes
  - Graded homework and exams

PUBLICATIONS

- **Journal Articles**

[1] **Elmorsy, M**, and Vamvatsikos, D. Impact of Beam-Column Joint Modeling Uncertainties on the Seismic Response of Low-Rise RC Frames. *Earthquake Engineering & Structural Dynamics*. 2025; p.e70024 DOI: 10.1002/eqe.70024

[2] **Elmorsy, M**, Leinenbach, C, and Vassiliou, MF. Cyclic behavior of physical models of reinforced concrete columns built with additive manufacturing. *Journal of Structural Engineering*. 2025; 151(5), p.04025043. DOI: 10.1061/JSENDH.STENG-13702

[3] **Elmorsy, M**, Leinenbach, C, and Vassiliou, MF. Small scale physical modelling of reinforced concrete joints using additively manufactured reinforcement. *Journal of Structural Engineering*. 2025; 151(5), p.04025036. DOI: 10.1061/JSENDH.STENG-13885

[4] **Elmorsy M**, Wrobel R, Leinenbach C, and Vassiliou, MF. Additively Manufactured Steel Reinforcement for Small Scale Reinforced Concrete Modeling: Tensile and Bond Behavior. *Materials and Design*. 2023; 241:112919. DOI: 10.1016/j.matdes.2024.112919

[5] **Elmorsy M** and Vassiliou MF. Effect of ground motion processing and filtering on the response of rocking structures. *Earthquake Engineering & Structural Dynamics*. 2023; 52(6):1704-21. DOI: 10.1002/eqe.3837

[6] Hassan WM and **Elmorsy M**. Cyclic nonlinear modeling parameters for unconfined beam-column joints. *ACI Struct Journal*. 2022;119(1):89-104. DOI: 10.14359/51733139

[7] Hassan WM and **Elmorsy M**. Probabilistic Beam–Column Joint Model for Seismic Analysis of Concrete Frames. *Journal of Structural Engineering*. 2022;148(4):04022011.3. DOI: 10.1061/(ASCE)ST.1943-541X.000323

[8] **Elmorsy M** and Hassan WM. Seismic Behavior of Ultra-High Performance Concrete Elements: State-of-the-Art Review and Test Data Trends. *Journal of Building Engineering*. 2021; 40, p.102572. DOI: 10.1016/j.jobe.2021.102572

[9] Hassan WM and **Elmorsy M.** Database Trends and Critical Review of Seismic Performance Tests on High Strength Steel Reinforced Concrete Components. *Engineering Structures.* 239, p. 112092, 2021. DOI: 10.1016/j.engstruct.2021.112092

[10] **Elmorsy MM**, Ghaleb AA, and El-Zoughiby ME. Performance-Based Seismic Assessment of Buildings with Curved Shear Walls. *Engineering Research Journal*. December 2019. DOI: 10.21608/ERJ.2019.131347

[11] **Elmorsy M**, Jones L, Wild M, Katsamakas A, Anastasopoulos I, and Vassiliou M. Benchmark Dataset from Centrifuge Shake Table Tests of 3D-Printed URM Structures for Seismic Model Validation. *Earthquake Spectra.* 2026; (in press).

[12] **Elmorsy M,** Jones L, Anastasopoulos I, Gunay S, Mosalam K, Tatsis K, and Vassiliou M. Shake Table Centrifuge Tests for Numerical Model Validation of URM Buildings: Results of a Blind Prediction Contest. *Earthquake Engineering & Structural Dynamics.* 2026; (under writing).

[13] **Elmorsy M**, Adamopoulou D, Zhang Y, Shea K, Jones L, Anastasopoulos I, and Vassiliou M. Shear Behavior and Centrifuge Seismic Modeling of a Sustainable Corbel

Dwellings with Interlocking Blocks. *Construction and Building Materials*. 2026; (under review).

[14] Reyes S, **Elmorsy M**, Candebat D, Blondet M, Mousakis C, Vasssiliou M. Three-directional Shake table testing of an unreinforced masonry structure isolated with a rolling isolation system. *Earthquake Engineering & Structural Dynamics*. 2026; (under writing).

- **Conference Papers and Abstracts**

[1] **Elmorsy, M**, Wrobel, R, Leinenbach, C, Vassiliou, MF. 2024: Small scale physical modeling of reinforced concrete using 3D printed steel reinforcement. In *18th World Conference on Earthquake Engineering (WCEE 2024)*.

[2] **Elmorsy, M**, Vassiliou, MF. 2024: Do ground motion processing and filtering affect the behavior of rocking structures?. In *18th World Conference on Earthquake Engineering (WCEE 2024)*.

[3] **Elmorsy, M**, Wrobel, R, Leinenbach, C, and Vassiliou, MF. 2024: Centrifuge-Based Physical Modeling of Reinforced Concrete Using 3D Printed Reinforcement Cages. In *5th European Conference on Physical Modelling in Geotechnics (ECPMG2024)*. DOI: 10.53243/ECPMG2024-141

[4] **Elmorsy, M**, Leinenbach, C, and Vassiliou, MF. 2024: Enhancing Centrifuge-Based Physical Modeling of Reinforced Concrete with 3D Printed Reinforcement Cages. In *4th Asia-Pacific Conference on Physical Modelling in Geotechnics (ACPMG2024)*. DOI: 10.53243/ACPMG2024-70

[5] **Elmorsy, M**, Katsamakas, A, Jones, L, Brunschweiler, E, Anastasopoulos, I, and Vassiliou, MF. 2024: Preliminary Centrifuge Tests on Unreinforced Masonry Buildings Built Using a Sand-Based 3D Printer. In *4th Asia-Pacific Conference on Physical Modelling in Geotechnics (ACPMG2024)*. DOI: 10.53243/ACPMG2024-69

[6] **Elmorsy, M**, Wrobel, R, Leinenbach, C, and Vassiliou, MF. 2023: Material Testing of Micro-Concrete and 3D-Printed Reinforcement for Use in Small-Scale Seismic Testing of RC Structures, *9th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2023)*, Athens, Greece.

[7] **Elmorsy, M**. and Vassiliou, MF. 2023: Ground motion processing in rocking structures, *9th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2023)*, Athens, Greece.

[8] **Elmorsy, M**, and Vassiliou MF. 2023: An Experimental Framework for Statistical Validation of System Level Assumptions in Seismic Analysis of RC Structures, Abstract, *21st Swiss Geoscience Meeting*, Swiss Academy of Sciences.

- **Theses**

[1] **Elmorsy M.** "Nonlinear Modeling Parameters for Beam-Column Joints in Seismic Analysis of Concrete Buildings," Master Thesis, University of Alaska Anchorage, Anchorage, AK, USA.

TEACHING AND ADVISING

- **Teaching**

Teaching Assistant, Mansoura University, Egypt **2017 – 2019 & 2021 – 2021**

STE432: Design of Concrete Structures III
STE331: Design of Concrete Structures II
STE231: Design of Concrete Structures I
STE420: Computer Applications in Structural Engineering

Teaching Assistant, ETH Zurich, Switzerland **2023 – 2024**
101-0157-01L: Structural Dynamics and Vibration Problems
101-0191-00L: Seismic and Vibration Isolation

- **Advising**
  - "Experimental Study on Small-Scale Seismically Isolated Masonry Houses Using Rolling Rubber Spheres as Seismic Isolation Bearings for Low-Income Countries," Vasile Madalin Cazacu, *Master Thesis*, Fall 2024, ETH Zurich.
  - "Centrifuge Modeling of Masonry Structures Using Binder Jetting 3D Printing," Manuel Wild, *Master Thesis*, Fall 2024, ETH Zurich.
  - "Physical Modelling of Reinforced Concrete via 3D Printed Reinforcement Cages for Use in a Geotechnical Centrifuge," Stefan Murer, Julian Schlachter, and Manuel Wild, *Master Project*, Fall 2023, ETH Zurich.
  - "Physical modelling of Reinforced Concrete for centrifuge modelling of Soil-Structure Interaction problems," Morena Giulieri, *Master Project*, Fall 2022, ETH Zurich.

GRANTS

- Postdoc.Mobility Grant, Swiss NSF (**CHF 186,666**, Approved). Project: *Advanced Seismic Topology Optimization and Physical Prototyping of Reinforced Concrete Structures Using Additive Manufacturing and Robotic Techniques.*
  Role: Applicant/PI. Host Institution: MIT, USA.

TECHNICAL SKILLS

Programming languages:	MATLAB, Python
CAD software:	Autodesk AutoCAD, Autodesk Inventor
Commercial structural analysis software:	CSI SAP2000, CSI ETABS, CSI SAFE
Nonlinear analysis software:	ABAQUS, OpenSees platform, CSI Perform 3D
Other skills:	MS Office, Inkscape

LANGUAGE PROFICIENCY

Arabic:	Native
English:	Fluent (C1/C2)
German:	B2