



Besim Yukselen

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ABOUT ME

I am a dedicated PhD student in Earthquake Engineering.

My academic journey began with a Bachelor of Science in Civil Engineering from Yildiz Technical University in Istanbul, Turkey. I furthered my studies with a Master of Science in Civil Engineering for Mitigation of Risk from Natural Hazards, Reduction of Seismic Risk curriculum jointly offered by the University of Pavia and the School of Advanced Studies IUSS Pavia.

During my Master's thesis, my research aimed to use statistical learning, a.k.a. machine learning algorithms, for predicting building responses, with the ultimate motivation of reducing the time required due to the time-consuming nonlinear response history analysis.

Transitioning to the industry after completing my master's degree, I gained valuable experience in seismic design, performance assessments, and retrofitting for various industrial and residential projects.

As a PhD student, my research focuses on the contemporary challenge of optimising integrated retrofitting strategies for the simultaneous needs for energy efficiency and seismic performance in residential buildings.

EDUCATION AND TRAINING

02/10/2023 – CURRENT Pavia, Italy

PHD. IN EARTHQUAKE ENGINEERING University School for Advanced Studies IUSS Pavia & University of Pavia

Website <https://www.iusspavia.it/it>

24/09/2018 – 24/02/2021 Pavia, Italy

MSC. IN CIVIL ENGINEERING FOR MITIGATION OF RISK FROM NATURAL HAZARDS REDUCTION OF SEISMIC RISK (ROSE) CURRICULA University School for Advanced Studies IUSS Pavia & University of Pavia

MSc. Graduation Thesis:

Various machine-learning techniques have been tested to predict the response of an archetypal high-rise building under seismic excitation with the aim of time gain during the computationally expensive structural analysis step of seismic risk assessment workflow. Later obtained results have been used to obtain the fragility functions.

Website <http://civrisk.unipv.it/> |

Thesis Use of Machine Learning Algorithms to Predict the Response of High-Rise Building for Probabilistic Loss Assessment

04/09/2012 – 17/10/2017 Istanbul, Türkiye

BSc. IN CIVIL ENGINEERING Yildiz Technical University

BSc. Graduation Thesis:

Use of different shear wall modelling techniques and comparison of results according to Turkish Earthquake Code-2007 for 20-storey buildings with different arm length "U" type shear walls modelled using ETABS and Sta4CAD software.

Investigation and Strengthening of Reinforced Concrete Buildings (Course):

An existing 5-storey reinforced concrete building has been modelled using SAP2000. The seismic performance of the building has been evaluated per the Turkish Earthquake Code-2007.

Reinforced Concrete Structure Design (Course):

A 6-story reinforced concrete building was designed according to the Turkish Earthquake Code-2007.

Website <http://www.yildiz.edu.tr/> |

Thesis Investigation of shear walls behaviour of reinforced concrete structures and modelling techniques of reinforced concrete shear walls

WORK EXPERIENCE

14/02/2022 – 01/05/2023 Istanbul, Türkiye

STRUCTURAL AND EARTHQUAKE ENGINEER MIYAMOTO INTERNATIONAL TURKEY

Seismic performance assessment of precast and cast-in-site reinforced concrete industrial buildings:

Seismic performance evaluation and assessment of an industrial facility's frame and wall-frame dual system precast / cast-in-site reinforced concrete buildings have been done as per the Turkish Building Earthquake Code – 2018 (TBEC-2018) by conducting nonlinear dynamic and/or static procedures.

Seismic performance assessment of steel industrial buildings:

Seismic performance evaluation and assessment of moment frame and/or braced frame system steel buildings of an industrial facility have been done as per the ASCE/SEI 41-17 by conducting linear static procedures.

Seismic performance assessment of industrial rack-clad buildings:

Seismic performance evaluation and assessment of an industrial rack-clad building have been done per FEMA-460, ASCE/SEI 41-17 and AISI S100-16 by conducting linear static procedures.

Ground motion record selection, scaling or matching:

Ground motion record selection, scaling and/or matching have been done as per the TBEC-2018 for conducting nonlinear response history analysis for varying structural systems.

Seismic performance assessment of non-structural building components:

Seismic performance assessment of non-structural building components of production and auxiliary buildings of an industrial facility has been done as per FEMA-E74.

The task included creating a semi-automatic Excel spreadsheet, which may be used for future works that obligate filling non-structural inventory forms and simple checks of components fixity as per ASCE/SEI 41-17, FEMA-306 and ACI-318. The spreadsheet has been generated holistically to cover FEMA-E74 and is localised to the Turkish industry.

Seismic retrofitting of the precast reinforced concrete building with friction dampers:

Seismic retrofitting of an industrial facility's frame system precast reinforced concrete building has been done via friction dampers as per the ASCE/SEI 41-17 and FEMA-273.

01/03/2021 – 11/02/2022 Hatay, Türkiye

STRUCTURAL DESIGN ENGINEER: YUKSELEN MUHENDISLIK

Seismic design and assessment of reinforced concrete residential buildings:

Design and assessment calculations of residential reinforced concrete buildings have been done according to the Turkish Building Earthquake Code – 2018

Design of secondary steel platforms:

Design of steel platforms which are located on the roof of a data center to hold the HVAC system, have been done. The design of the platform has been done according to the Turkish Building Earthquake Code – 2018.

LANGUAGE SKILLS

Mother tongue(s): **TURKISH**

Other language(s):

| | UNDERSTANDING | | SPEAKING | | WRITING |
|----------------|---------------|---------|-------------------|--------------------|---------|
| | Listening | Reading | Spoken production | Spoken interaction | |
| ENGLISH | C1 | C1 | C1 | C1 | C1 |

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

OpenSees | Seismosoft Products | Python | MATLAB | SAP2000 | ETABS | IdeaStatica | MS Office, Excel programming (VBA) | AutoCAD | LaTeX

● ADDITIONAL INFORMATION

PROJECTS

01/11/2023 – CURRENT

Prior-Built: Prioritisation of the Italian regions for seismic and energy performance upgrading of the existing buildings

University: University School for Advanced Studies IUSS, Palazzo del Broletto, Piazza della Vittoria 15, 27100 Pavia PV & University of Porto, Portugal

Principal Investigator: Gianrocco Mucedero

Funded by: ReLUIS

Activity: Develop a solid integrated prioritisation framework for the Italian regions based on primary metrics needed for regional assessment. The prioritisation framework provides different prioritisation patterns and different refinement scales, from province-level to regional/national-level. The proposed framework can support the Italian government in foreseeing economic support and strategic financial planning for seismic strengthening and energy renovation interventions on existing buildings.

01/11/2023 – CURRENT

SERENE - Optimal Seismic and Energy Retrofit of Buildings considering Economic and Environmental Impacts

University: University School for Advanced Studies IUSS, Palazzo del Broletto, Piazza della Vittoria 15, 27100 Pavia PV & University of Porto, Portugal

Principal Investigator: Prof. Ricardo Monteiro

Funded by: Portuguese National Foundation for Science and Technology

Activity: Seismic performance assessment and retrofitting of existing RC buildings. Implementation of MCDM approach for the selection of optimal integrated retrofitting interventions.

20/10/2020 – 22/05/2021

A python module to download unscaled record time histories A module has been created as a web automation tool to download unscaled record time histories from the NGA-West2 Database by Record Sequence Numbers (RSNs) with given user credentials.

The code can be reached at

https://github.com/BsmYksIn/NGA_W2_RSNs2TH

01/09/2016 – 30/09/2016

Performance Evaluation of Existing Masonry Building A masonry building with 5-storey each story 600 m² was modelled using ETABS. Later, the seismic performance of the building was evaluated per the Turkish Earthquake Code 2007.
