MOHAMMAD ASKARI

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EDUCATION

University of California, Los Angeles, United States of America Sep 2021 - Present
Ph.D. in Structural Engineering and Mechanics
Cumulative GPA: ***4.0/4.0*** via 76 Passed Credits

Sharif University of Technology, Tehran, Iran Sep 2017 - Jan 2020
M.Sc. in Earthquake Engineering
Cumulative GPA: ***4.0/4.0*** (*17.08/20*) via 26 Passed Credits

Sharif University of Technology, Tehran, Iran Sep 2013 - Aug 2017
B.Sc. in Civil Engineering
Cumulative GPA: ***3.8/4.0*** (*17.56/20*) via 140 Passed Credits

HONORS AND AWARDS

Fully Funded Ph.D. Position Offer Mar 2020
Civil and Environmental Engineering Department
University of California, Los Angeles, United States of America

Ranked 7th Among More Than 100 Peer B.Sc. Students Aug 2017
Civil Engineering Department
Sharif University of Technology, Tehran, Iran

Direct Admission to M.Sc. Program with Full Scholarship Jun 2017
Sharif University of Technology, Tehran, Iran

Scholarship Foundation Award Due to High Academic Achievement Feb 2015
Iran's National Elites Foundation (INEF)

Iran National University Entrance Exam, Konkour Jul 2013
Ministry of Education, Tehran, Iran
Ranked 198th (top 0.08%) among more than 250,000 participants in mathematics and physics field.

Semifinalist in the 22nd and 23rd National Chemistry Olympiad Feb 2011, Feb 2012
Ministry of Education, Tehran, Iran

RESEARCH INTEREST

- Deep Learning
- Machine Learning
- Artificial Intelligence
- Generative AI
- Geographic Information Systems (GIS)
- Computer Vision
- Natural Language Processing
- Software Development
- Probabilistic Modelling
- Smart Cities

PUBLICATIONS

Journal Article (under review) Oct 2023
Rapid Large-Scale Post-Earthquake Damage Classification
Nature Communications Earth and Environment

Mohammad H. Soleimani-Babakamali, **Mohammad Askari**, Mohammad A. Heravi, Rafet Sisman, Nahid Attarchian, Aysegul Askan, Rojiar Soleimani, and Ertugrul Taciroglu. "Deep Ensemble Learning for Rapid Large-Scale Post-Earthquake Damage Assessment—Application to 2023 Kahramanmaraş Earthquake Sequence." (2023).[preprint DOI]

Technical Report and Poster Presentation Feb 2022
GPU-based Multiple Target Spectra Ground Motion Selection Tool.
The B. John Garrick Institute for the Risk Sciences, ACSE LifeLines 2021-22

Mehrdad Shokrabadi, Yousef Bozorgnia, Henry V. Burton, Jack W. Baker, and **Mohammad Askari**. "An Efficient Computational Platform for Selecting and Scaling Ground Motion Records while Considering Multiple Target Spectra." (2022) [DOI][GitHub]

Technical Report Mar 2021
Probabilistic Seismic Hazard Analysis for Tehran City
Tehran Disaster Mitigation and Management Organization (TDMMO)

Mohammad Askari, and Mojtaba Mahsuli. "Modeling of Epistemic Uncertainties in Seismic Hazard Analysis Based on Reliability Methods." Center for Infrastructure Sustainability and Resilience Research, Sharif University of Technology, Tehran, Iran.

RESEARCH EXPERIENCE

Research Assistant Sep 2022 - Present
Data Analyzer, Machine Learning Engineer

Taciroglu Research Group (TRG), University of California, Los Angeles
Website: tacirogluresearch.org

I am one of the members of the building inventory group for the CHEER-CoPe project, working on the following tasks:

- Convolutional Neural Network classification on satellite and street-view imagery.
- Generating empirical fragility curves by post-hazard damage assessments using Deep Learning and Machine Learning methods.
- Privacy-preserved natural language processing on post-hazard damage descriptions from NCIUA insurance company.

Research Assistant Sep 2021 - Aug 2021
Data Analyzer

The B. John Garrick Institute for the Risk Sciences, University of California, Los Angeles
Website: risksciences.ucla.edu

My contributions include:

- Finalizing and setting up the GitHub for the GPU-based ground motion selection tool developed in Python;
- Running ANSYS Mechanical APDL models on Texas Advanced Computing Center (TACC) to simulate pipelines under multiple support excitations and fit regression models to the outputs.

Research Assistant Aug 2018 - Aug 2021
Software Developer, Probabilistic Seismic Hazard Analyzer

Center for Infrastructure Sustainability and Resilience Research (INSURER), Sharif University of Technology, Tehran, Iran
Website: insurer.sharif.ir

I was one of the members of the software development team of Rtx, a computer program comprising various probabilistic models for reliability, risk, and resilience analysis. This software is implemented in an object-oriented architecture using C++ and Qt.

Rtx Developers: rtx.civil.sharif.edu/developers.html

My contributions include:

- Major overhaul of probabilistic seismic hazard analysis models, including implementing a library of new geographical seismic source models, ground motion prediction models, and the development of rupture area model;
- Creating the earthquake hazard analysis toolbox using MATLAB with a graphical user interface that works in parallel with Rtx.
- Revising Bayesian model inference of Rtx.

TEACHING EXPERIENCE

Teaching Assistant Oct 2023 - Present
Advanced Structural Analysis University of California, Los Angeles

Instructor: Professor Ertugrul Taciroglu
Level: Graduate
Responsibilities: Holding discussion sessions, office hours, solving problem sets and exams.

Teaching Assistant Mar 2023 - Jun 2023
Introduction to Probability and Statistics for Engineers University of California, Los Angeles

Instructor: Professor Enrique Lopez Droguett
Level: Undergraduate
Responsibilities: Holding discussion sessions, office hours, solving problem sets and exams.

Teaching Assistant Mar 2022 - Jun 2022
Fundamentals of Earthquake Engineering University of California, Los Angeles

Instructor: Professor Yousef Bozorgnia
Level: Undergraduate
Responsibilities: Holding discussion sessions, office hours, solving problem sets and exams.

Teaching Assistant Feb 2020 - Jun 2020
Infrastructure Resilience Sharif University of Technology

Instructor: Professor Mojtaba Mahsuli
Level: Graduate
Responsibilities: Note preparation

Teaching Assistant Feb 2020 - Jun 2020
Reliability, Risk, and Resilience Sharif University of Technology

Instructor: Professor Mojtaba Mahsuli
Level: Undergraduate
Responsibilities: Note preparation

SELECTED COURSES

Sharif University of Technology

- Structural Reliability and Probabilistic Modeling: 17.3/20 – Professor Mahsuli
- Infrastructure Resilience: 17.3/20 – Professor Mahsuli
- Fundamentals of Earthquake Engineering: 18.7/20 – Professor Mahsuli
- Fundamentals of Python Programming: 19.3/20 – Dr. Nikaein
- C++ Programming: Audited – Professor Bazargan
- Numerical Calculations: 18.7/20 – Dr. Mohammadi
- Differential Equations: 19.0/20 – Dr. Kianpour

UCLA

- STATS M231A - Pattern Recognition and Machine Learning: A+ — Professor Wu
- STATS 256 - Causality: A — Professor Hazlett
- ECE C247 - Neural Networks and Deep Learning: A — Professor Kao
- CEE 239 - Structural Dynamics: A+ — Professor Narasimhan
- CEE 235 - Advanced Structural Analysis: A+ — Professor Burton
- CEE 245 - Ground Motion Characterization: A+ — Professor Bozorgnia

SELECTED ACADEMIC COURSE PROJECTS

Ph.D.

- A Tutorial on Doubly Robust Targeted Maximum Likelihood Estimation Method. – Advisor: Professor Hazlett
- Implementing GPT-2 model for Shakespeare-like text generation using PyTorch. – Advisor: Professor Wu
- Exploring the Performance of CRNN, LSTM, Conditional GANs, and CNN on EEG Data using TensorFlow. – Advisor: Professor Kao
- Linear-Elastic Analysis of Three-Dimensional Structures for Any Geometry to Be Input into the MASTAN2 Pre-Processor Using MATLAB. – Advisor: Professor Burton

M.Sc.

- Evaluating a Community Resilience from Hazard Occurrence and Its Consequences to Recovery Process Using C++ and Rtx. – Advisor: Professor Mahsuli
- Investigation of Fragility Curves and Damage Modeling of Kermanshah Earthquake Using SeismoSignal, MATLAB, and Rtx. – Advisor: Professor Mahsuli
- Probabilistic and Deterministic Seismic Hazard Analysis of Kermanshah Province Using MATLAB and Mathcad. – Advisor: Professor Rahimzadeh
- Study on Earthquake Frequency Content and Response of Structural Members Using SeismoSignal, MATLAB, and SAP2000. – Advisor: Professor Dolatshahi
- Discrete Event Simulation of Concrete Batching Plant Using Visual Basic, AnyLogic, and MathWave EasyFit. – Advisor: Professor Alvanchi

B.Sc.

- Computing the Nonlinear Response of a Single-Degree-of-Freedom System Subject to Earthquake Excitation Using Newmark-Beta Numerical Method in MATLAB. – Advisor: Professor Mahsuli
- Python Programming Project of Processing Customers Demand Input via Text and Developing a Graphical User Interface Based on Object-Oriented-Programming and Tkinter Library. – Advisor: Dr. Hassan Nikaein

LICENSES AND CERTIFICATIONS

Deep Learning Specialization May 2023
Coursera
Instructor: Andrew Ng – DeepLearning.AI
View Certificate

Summer Invitational Terminal 2022 Aug 2022
Correlation One
Al Programming Competition – Strategic Game Play Design
View Certificate

Machine Learning Feb 2021
Coursera
Instructor: Andrew Ng – Stanford University
View Certificate

COMPUTER SKILLS

Programming	C/C++, Python, R, Visual Basic
Mathematical Applications	MATLAB, Mathematica
Graphics	AutoCAD, AutoCAD Civil 3D, Photoshop
Other Tools	Microsoft Office, Mathcad, LaTeX

LANGUAGES

English – Professional Working Proficiency

Persian – Native

EXTRA CURRICULAR ACTIVITIES

- **Helping on Assembling RazFi Supercomputer with 210 Physical Cores** Sep 2019
  Center for Infrastructure Sustainability and Resilience Research (INSURER)
- **Intra-University Basketball Tournament** Apr 2017, Dec 2019
  Sharif University of Technology, Tehran, Iran
  Ranked 3rd
- **Intra-Department Swimming Tournament** Nov 2019
  Civil Engineering Department, Sharif University of Technology, Tehran, Iran
  Ranked 2nd in Breaststroke 50m and 3rd in Freestyle 4x50m

- **Mountain Climbing** Sep 2019
  Physical Education, Sharif University of Technology, Tehran, Iran
  Summited Mount Alam-Kuh with an elevation of 4850m
- **Solo Piano Performance** Dec 2018
  Pedar Music Academy 8th Concert
  Performed pieces composed by J. S. Bach, Franz Schubert, and Max Richter

REFERENCES

Professor Ertugrul Taciroglu Professor
Website: samueli.ucla.edu/people/ertugrul-taciroglu/
Email Address: etacir@ucla.edu

Professor Mojtaba Mahsuli Associate Professor
Website: sharif.edu/∼mahsuli/
Email Address: mahsuli@sharif.edu