

Curriculum Vitae /Resume

Mohsen Vatandoost, Ph.D., M.Arch., M.Sc.

Academic Rank: Ph.D. in Architectural Technology at the University of Tehran

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About

He has a Ph.D. in Architectural Technology from the University of Tehran. He has been a visiting scholar and research assistant at Taubman College at the University of Michigan for over a year. Mohsen's interdisciplinary doctoral research, titled 'Form-finding and optimization of shell structures,' bridges architecture and structural engineering disciplines. He Has studied in both fields of architecture (M.Arch.) and structural engineering (M.Sc.) and has expertise in computational design, structural optimization, and digital fabrication. Moreover, he has more than ten years of professional experience, including designing and constructing various project types and scales. Additionally, He has more than four years of teaching experience and works actively on scholarly works.

Highlights

- Ph.D. in architecture technology and studied in both fields of architecture (M.Arch.) and structural engineering (M.Sc)
- Co-Author of two published books and cooperation in two other books that are getting ready for publication (expected in 2024).
- More than four years of Teaching experience in academia (Teaching Assistant, Adjacent Lecturer, Guest Lecturer)
- Member of IRAN's National Elites Foundation

Education

2023	Ph.D. in Architectural Technology , University of Tehran, Tehran, Iran
2024 (expected)	Master of Science (M.Sc.) in Architecture Design and Research degree in the concentration of Digital and Material Technologies , University of Michigan, Ann Arbor, USA.
2018	Master of Art (M.Arch.) in Architecture , Iran University of Science and Technology (IUST), Tehran, Iran
2010	Master of Science (M.Sc.) in Structural Engineering , Islamic Azad University (IAU), Iran
2006	Bachelor of Science (B.Sc.) in civil engineering , Islamic Azad University (IAU), Tehran, Iran

Research Experience

2022-23	Research Assistant, ADR Lab, University of Michigan , Directed by Assistant Professor Arash Adel, Taubman College of Architecture and Urban Planning, Ann Arbor, Michigan, USA. <ul style="list-style-type: none"> ▪ Structural assessment and optimization of Robotic Fabrication Structures
2021	Research Assistant, Mahmood Golabchi's Lab, University of Tehran , Department of Architecture, directed by prof M. Golabchi <ul style="list-style-type: none"> ▪ Utilizing metaheuristic algorithms in the design process

- 2019 **Research Assistant, Advanced Design @ Fabrication Laboratory (ADF Lab),** Directed by Associated Prof. A. Ekhlassi, Department of Architecture, Iran University of Science and Technology, Tehran, Iran.
- Computer Simulation and parametric modeling with Grasshopper of Rhino
- 2018 **Master of Architecture thesis,** Iran University of Science and Technology, supervisor: Prof. A. Ekhlassi and Prof. S. A. Yazdanfar
- Optimization of the Building orientation with the application of intelligent algorithms in the design process
- 2010 **Master of Science thesis,** Islamic Azad University and International Institute of Earthquake Engineering and Seismology (IIEES), supervisor: Professor F. Natyeghi-Alahi
- Computer Simulation and FEM Analysis of the Precast Prestressed Concrete Braces

Awards & Honors

- 2023 University of Michigan scholarship and Fellowship for the Master of Science (M.Sc.) in Architecture Design and Research degree in the concentration of Digital and Material Technologies (DMT) program at Taubman College of Architecture and Urban Planning
- 2022 The University of Tehran Scholarship for supporting international academic Visiting (May 2022)
- 2019 Best result and Score on the Comprehensive Exam among all the Ph.D. classmate students (University of Tehran, 2019)
- 2019 Highest average grade point among all the Ph.D. classmate students, grade excellent 18.71 out of 20 (equivalent to a GPA of 4.0), the University of Tehran, (2019)
- 2018 Top student, best Score among all the colleges (M.Arch.), 18.78 out of 20 (equivalent to GPA of 4.0) grade Excellent, with a written document, Iran University of Science and Technology
- 2018 The highest grade for the M.Arch. Thesis (19.25 of 20) with a written document, Iran University of Science and Technology
- 2017 Ministry of Science, Research and Technology of Iran (MSRT) full scholarship for M.Arch. in Iran University Science and Technology
- 2010 Ranked No.3 in the national entrance exam, Islamic Azad University, M.Sc. Structural Engineering program

Books

Published books

- 2019 The Story of Post-Modernism; Five Decades of Ironic, Iconic and Critical in Architecture, by Charles Jencks (2011). *Translated in Farsi* by Mohsen Vatandoost, Published by Simaye-Danesh, Tehran, Iran, (2019), ISBN: 978-600-120-462-3, link: <http://opac.nlai.ir/opac-prod/bibliographic/5920166>
- 2019 Lean-led Hospital Design; Creating Efficient Hospital of the Future, By Charles Hagood and Naida Grunden (2012), *Translated in Farsi* by M. Vatandoost, A. Ekhlassi, S. A. Yazdanfar, Publisher: Simaye-Danesh, Tehran, Iran, (2019), ISBN: 978-600-120-466-1, link: <http://opac.nlai.ir/opac-prod/bibliographic/5970792>

In the process of publication

- 2023 Expected 'Seismic Strengthening of Concrete Structures: Introducing Precast Prestressed Concrete Braces,' **Co-author** with distinguished professor F. Nateghi-Alahi. Status: the first draft is ready and needs a final editorial.

2023 Expected 'Human. Nature. Technology, **co-author** with distinguished professor Mahmood Golabchi, Pars University Press. Status: the first draft is ready.

Patent

2021 Title: Single Diagonal Precast Prestressed Concrete Bracing for seismically retrofitting Reinforced Concrete Frames; Leading Scholar: Professor Fariborz Nateghi (Distinguished Professor of Structure and Earthquake Engineering, IIEES), Co-worker: Mohsen Vatandoost, Role: Cooperation in Data collection and data analysis; Status: formally submitted and under Evaluation, March 2021

Peer-Reviewed Journal Papers

In the process of publication

- 2023 Vatandoost, M. Golabchi, M. Ekhlasi, A. Rahbar, M. (2023). COMPUTATIONAL MORPHOGENESIS OF CONCRETE SHELL STRUCTURES BY UTILIZING NSGA-II. *Journal of the International Association of the Shell and Spatial Structures*, Status: under review.
- 2023 Vatandoost, M. Golabchi, M. Ekhlasi, A. Rahbar, M. (2023). Combining multi-objective optimization with the analytic hierarchy process for the optimal design of shell structures. *Structures, Elsevier*. Status: under review.
- 2023 Vatandoost, M. Ekhlasi, A. Golabchi, M. Rahbar, M. and Peter von Buelow. (2023). Design to Fabrication: A Review of fabrication methods of shell structures, *Automation in Construction*. Status: under review.
- 2023 Vatandoost, M. Golabchi, M. Ekhlasi, A. Rahbar, M. (2023). Topology and thickness optimization of concrete thin shell structures based on weight, deflection, and strain energy. *Journal of Building Engineering*. Status: under review.
- 2023 Vatandoost, M. (2023). Dolphin Echolocation Algorithm for optimization of grid shells. *Journal of the International Association of the Shell and Spatial Structures*. Status: first draft.
- 2023 Vatandoost, M. (2023). Utilizing A.I. and machine learning in the early stage of the design of shell structures. *Automation in construction*. Status: first draft.

Published

- 2020 Vatandoost, M., Ekhlasi, A., & Yazdanfar, S. A. (2020). Computer-Aided Architectural Design: Classification and Application of Optimization Algorithms. *Journal of Information and Computational Science*, 10(6), 18-43. ([Link to publication](#))
- 2019 Vatandoost, M., Yazdanfar, S. A., & Ekhlasi, A. (2019). Computer-Aided Design: Classification of Design Problems in Architecture. *Journal of Information and Computational Science*, 9(10), 605-625.
- 2019 Vatandoost, M., & Litkouhi, S. (2019). The future of healthcare facilities: how technology and medical advances may shape hospitals of the future. *Hospital Practices and Research*, 4(1), 1-11. ([Link](#))
- 2018 Nateghi A, F., & Vatandoost, M. (2018). Seismic retrofitting R.C. structures with precast prestressed concrete braces-ABAQUS FEA modeling. *International Journal of Engineering*, 31(3), 394-404.
- 2018 Alahi, F. N., & Vatandoost, M. (2018). Single diagonal precast prestressed concrete bracing for strengthening existing concrete frames. *International Journal of Advanced Structural Engineering*, 10(4), 339-347.

- 2017 Nateghi A, F., & Vatandoost, M. (2017). Seismic Assessment of the Precast Prestressed Concrete Braces. Research Bulletin of Seismology and Earthquake Engineering (Pizhūhishnāmāh-i zilzilāh/shināsī va muhandisī-i zilzilāh), ISSN 1735-1677. 20(1), 37-54

Peer-Reviewed Conference Papers

In the process of publication

- 2023 Adel, A. Mozaffari, S. Vatandoost, M. Liu, X. (2023). Structural assessment of the non-standard size reclaimed lumber robotically fabricated timber trusses.

Published

- 2021 Vatandoost, M., Yazdanfar, S. A., & Ekhlasi, A. (2020). CAAD: Optimization of Building Orientation based on maximizing daylight, case study: Extension and Renovation of Baharloo Hospital. 6th National Congress on civil engineering, architecture, and urban development. Tehran, <https://civilica.com/doc/1373998>
- 2020 Vatandoost, M., Yazdanfar, S. A., & Ekhlasi, A. (2020). Applying the Delphi method in Computer-Aided Design, case study: Extension and Renovation of Baharloo Hospital. 1st conference on civil engineering, urban planning, architecture, and environment, 17 February 2022, Vienna, Austria.
- 2019 Vatandoost, M., & Nateghi A, F. (2019). *Developing a method of strengthening concrete structures: Precast Prestressed Concrete Braces*, Paper presented at the 2nd National Conference on Civil Engineering, Architecture and Urban Development of the Islamic World Countries (2019-10-21).With Science Nordic Certificate: NSPR47258
- 2017 Nateghi A, F., & Vatandoost, M. (2017). Single diagonal precast prestressed concrete braces for retrofitting reinforced concrete structures, Paper presented at the 5th Civil Engineering, Architecture & Urban Development (2017-12-26), Tehran. ICSAU05-1439. (ISC)

Thesis and Dissertation

- 2023 Ph.D. thesis, Architectural Technology, 'Form-finding and Optimization of Shell structures with Meta-heuristic Algorithms,' supervisor Mahmoud Golabchi (Distinguished professor of Architectural Technology, University of Tehran), and second supervisor Ahmad Ekhlasi (Associate professor, Iran University of Science and Technology), Advisor Morteza Rahbar (Assistant professor, IUST); University of Tehran, Tehran, Iran. (2023)
- 2019 M.Arch thesis, Architectural Engineering, ' Extension and Renovation of Baharlou Hospital with the application of the intelligent algorithms in the design process.' Supervised by Professor S.A. Yazdanfar and co-supervised by Ahmad Ekhlasi, Iran University of Science and Technology (IUST), Tehran, Iran. (2019)
- 2010 M.Sc. thesis, Structural Engineering, 'Seismic Retrofitting R.C. Structures with Precast Prestressed Concrete Braces,' supervised by distinguished earthquake engineering and disaster management professor, International Institute of Earthquake Engineering and Seismology (IIEES), Fariborz Nateghi-Alahi (IIEES), Islamic Azad University (IAU), Qazvin, Iran.

Teaching Experience: (2018-now)

Teaching Assistant

Iran University of Science and Technology, Department of Architecture

Design Studio I, Design Studio II

Grade: graduate level (M-Arch healthcare design)

- fall 2019 Subject: Design of a 96-bed General Hospital in East Tehran
spring 2019 Subject: Extension and Renovation of Bou-Ali Hospital
fall 2020 Subject: Design of a 96-bed General Hospital in Chitgar of Tehran
spring 2020 Subject: Extension and Renovation of Baharlou Hospital

Pars University, Department of Architecture

Design Studio I, Design Studio II

Grade: graduate level (M-Arch Digital Architecture)

- fall 2021 Subject: High-rise tower multi-functional design
Spring 2022 Subject: Iran Pavilion for the 2025 Expo

Adjunct lecturer

Pars University, Department of Architecture

Design Studio II, Design Studio IV - online class

Grade: undergraduate

- spring 2022 residential-work mixed-use design (Design Studio II)
fall 2022 Extension of the Ramsar Airport (Design Studio IV)

Guest Lecturer

Iranian Architecture Center (IAC), School of Architecture

the final workshop: sketch and design strategies

Grade: prepare graduated Bachelor students for master of art positions in the National yearly Conquer.

Subject: Architectural design thinking and process, sketches by hand.

summer school of
(2018), (2019), (2020)

Presentation

- 2021 University of Tehran
Subject: Bionic Architecture, inspiration by Nature
Audiences: Master of Architecture students (Digital Architectural)
Host: professor. K. Taghizadeh
- 2020 Iran University of Science and Technology
Subject: Lean-led Hospital Design
Audiences: Master of Architecture students (Healthcare facility Design)
Host: Assistant professor. S. Litkouhi

Professional Licenses and Certifications

- 2009-Present **Professional Engineer, P.E.** since 2009 (Over 13 years)
Issued by: Department of Roads & Urban Planning + Construction
Engineering Organization of Tehran Province. Tehran, Iran.
- 2010-2022 **Consulting Engineering Certification and License**, Bolandmartabe Vatan
Consulting Engineering Firm. My role: Co-founder and board member.
Issued by: Department of Roads & Urban Planning + Construction
Engineering Organization of Tehran Province. Tehran, Iran.

Other professional experiences

(some selected contributions are listed)

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- 2010-22 Co-founder and member of the board at Boland Martabe Group (BMG), an
Architectural consulting engineering firm, 2010- 2021 (12 years)

- 2020 Extension and renovation of AJA University of Medical Science in Tehran, site study and management, design of new College of Medical Science, design of Student Dormitory extension, Role: Leading architecture, Phase 0, and Phase I, cooperation with IGM Group. (2020)
- 2020-21 Extension and renovation of Shahid Chamran hospital in Tehran, design of the new building for Genetic Lab and adding three surgery rooms and C.T. Scan and CT-Angio section, Leading architecture for phase II and redesign of Phase I, cooperation with IGM Group. (2020-21)
- 2020-21 Extension program for Café Mohit- Restaurant and coffee shop, design and seismic retrofitting and Interior design, Role: Design and Expert Consultant, (2020-21)
- 2011-12 Extension and Refurbishment of General Clinic in Pasdaran, Tehran, (2021) Co-founder of Vatan Tarh Sakht (VTS), an Architectural consulting engineering firm (2011- 12)
- 2007-17 Project Manager for some residential, office, and mixed-use projects, including Sarmad (mixed-use), Hovieze (office), and Kavosifar (office-commercial) (2007-2017)
- 2010-21 Certified Supervision (Architectural, Structural) for residential buildings in Tehran, officially assigned by TCEO (Tehran Construction Engineering Organization) for more than 15 projects (2010-2021)
- 2005-17 Structural Design, Design Control, and supervising various projects (more than 500,000 square meters, approximately 800 projects) from residential to commercial and office buildings in Tehran and other parts of the country, BMG group (2005-2017)

Programming languages & other computer skills

Title	Level of proficiency
Python	Advance
KRL (KUKA Robot Language)	Intermediate
Rhino	Advance
Grasshopper	Advance
Revit	Advance

Scientific and Professional Societies

- 2021-Present International Association for Shell and Spatial Structures (IASS), Member since 2021
- 2009-Present Tehran Construction Engineering Organization (TCEO), (Nezam Mohandesi Tehran), with Grade 1 Engineer professional license, Licensed Member.
- 2010- Present Iranian Concrete Institute (ICI), Member
- 2009- Present Iran National Retrofitting Center (IRNC)