

Hamed Sangin

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Profile Summary

Passionate researcher with expertise in sustainable energy, environmental engineering, and architecture. My international academic background includes dual master's degrees in environmental and Land Engineering, and Sustainable Architecture. With an H-index of 8 on [Google Scholar](#), I bring extensive research experience, multiple publications, and a strong background in teaching and mentoring teams for global competitions, including the U.S. Department of Energy Solar Decathlon.

Education

- **M.Sc. in Environmental and Land Engineering**
Climate Change Track | Turin Polytechnic University, Italy | 2022 – 2025
Thesis: Optimizing Climate-Responsive PCM Integration in Office Buildings for Energy Efficiency and Comfort in Iran |
- **M.Sc. in Sustainable Architecture**
Tehran University of Art, Iran | 2017 – 2021
Thesis: Feasibility of VR Gamification Tools to Optimize User Behavior in Buildings | Grade: Very Good (18-19/20)
- **B.Sc. in Civil Engineering**
Islamic Azad University of Mashhad, Iran | 2011 – 2016

Research Interests

- Building Performance Simulation (BPS): Energy, Daylighting, Thermal, Airflow, Acoustics
- **Data-Driven** Building Performance **Optimization**
- **Human-Centered** Built Environments
- **Climate Resilience** Technologies
- Immersive Technologies in Design (VR/AR)
- **Data Science** for Architecture & Engineering

Skills

- **Architecture Design & Operations:** Revit, Rhino, Grasshopper
- **Building Performance Evaluation:**
Thermal: EnergyPlus, Honeybee, Ladybug Tools
Lighting: DIALux evo, Radiance, Daysim
Air Flow: Butterfly, Autodesk CFD, Eddy3D
Acoustic: Odeon, Pachyderm
- **Building Performance Optimization:** JEPlus, Galapagos, Octopus, Wallacei
- **Prediction of Human Performance:** ALFA, OWL, NeuroVision, EEG, fMRI
- **Programming & Data Science:** Python, Machine Learning, Deep Learning
- **Soft Skills:** App Development, Drawing, Teamwork

- **Other Tools:** NVivo, EndNote, VOSviewer

Publications & Research Projects

- **Research Project:**

A research project founded in collaboration with Tehran Art University: "**Creating tools (applications) to guide and encourage users to reduce carbon dioxide emissions and energy consumption in buildings using augmented reality**"

- **Published Papers:**

Paper published in Q2 Journal of Advances in Building Energy Research: "[Comprehensive assessment of energy, daylight and visual comfort of rooftop and shading building-integrated photovoltaics across desert, steppe, and Mediterranean climates](#)"

Paper published in Q1 Journal of Building Engineering: "[Thermal comfort, daylight, and energy performance of envelope-integrated algae-based bioshading and static shading systems through multi-objective optimization](#)"

Paper published in Q1 Building and Environment Journal: "[Multi-objective optimization of energy and daylight performance for school envelopes in desert, semi-arid, and mediterranean climates of Iran](#)"

Paper published in Q1 Buildings journal: "[Optimizing Daylight and Ventilation Performance: A Building Envelope Design Methodology](#)"

Paper published in Q1 Journal of Building Engineering: "[Multi-objective optimization of building-integrated microalgae photobioreactors for energy and daylighting performance](#)"

Paper published in Q1 Energy and Buildings journal: "[Energy Performance of Building Integrated Photovoltaic high-rise building: case study, Tehran, Iran](#)"

Paper published in Q2 Journal of Daylighting: "[A Multi-objective Optimization of Window and Light Shelf Design in Office Buildings to Improve Occupants' Thermal and Visual Comfort](#)"

Paper published in Q2 Journal of Daylighting: "[Multi-objective Optimization of Window and Shading Systems for Enhanced Office Building Performance: A Case Study in Qom, Iran](#)"

Paper published in Q3 Journal of Solar Energy Research: "[The Orientation of Village, the Most Important Factor in Rural Sustainability in Cold Climate \(Case study: Masuleh and Uramantakht\)](#)"

Paper published in Iranica Journal of Energy & Environment: "[Optimizing Building Configuration and Orientation for Social Housing Projects in Iran](#)"

Preprint article in Social Science Research Network (SSRN): "[Enhancing Energy Efficiency in a Hypothetical Building Through Analysis of Orientation, WWR, Shading, Window Shape, and Illuminance Intensity](#)"

- **Work-In-Progress Papers:**

(Under Review Paper) Under Review at Q2 Intelligent Buildings International Journal (Date of Submission Sep 11, 2025) "**Biomimetic Adaptive Façades Inspired by Lomelosia stellata: Integrating Water Harvesting and Energy Efficiency**"

(Under Review Paper) Under Review at Q1 Energy Reports Journal (Date of Submission May 6, 2025) "**Unveiling the Impact of Urban Heat Island (UHI) Effect on Photovoltaic Panel Efficiency: A Case Study in Mashhad, Iran**"

(Under Review Paper) Under Review at Q2 Sustainability Journal (Date of Submission Mar 5, 2025) "**A Novel Framework for Optimizing Building Energy Performance and Indoor Comfort Using BO-XGBoost and NSGA-II**"

(Under Review Paper) Under Review at Q2 Journal of Daylighting (Date of Submission Mar 17, 2025) "Reducing energy consumption in buildings with emphasis on optimizing the shutter angle; Using Augmented Reality (AR) Technique"

(Paper in Progress) "Integrating Additive Manufacturing into Construction Planning of Martian Habitat Units"

(Paper in Progress) "Space Architecture—A Prospective Review on Extraterrestrial Habitat Design"

(Paper in Progress) "Potentials and applications of parametric-based tools in construction waste management: A review"

(Paper in Progress) "A comprehensive evaluation electricity production and time of carbon and energy and cash payback of PV system for common housing in Mashhad"

(Paper in Progress) "How can virtual reality help architecture to design zero-energy buildings"

(Paper in Progress) "Multi-objective optimization thermal, visual comfort daylighting for non-visual effect: case study in educational space for different climate in Iran"

(Paper in Progress) "Simulations of Non-Visual Effects of light in building design: A literature review"

- **Books:**

"[Review of Passive Design Strategies in Cooling and Heating](#)" (Author)

"[A Six-step Guide to Designing with Virtual Reality](#)" (Author)

"[A Six-step Guide to Designing with Augmented Reality](#)" (Author)

"[Computational Fluid Dynamics in Building Design](#)" (Translator - from English to Persian)

"[The Architecture of Happiness](#)" (Translator - from English to Persian)

- **Conferences & Presentations:**

Oral Presentation at 7th International Conference on New Research in Civil Engineering, Architecture, Urban Management: "[Sustainability Parameters in Villages and its Relationship with Energy Efficiency Optimization of Rural Housing](#)"

Oral Presentation at the 6th International Conference on Solar Energy (ICESE 2018): "[Potential of Saving Electricity Energy in Common Housing by Photovoltaic Panels in Mashhad with Ladybug](#)"

Oral Presentation at the 6th International Conference on Solar Energy (ICESE 2018): "[Analysis of roof-mounted photovoltaic systems with Honeybee a plug-in for grasshopper – The case of in Esfahan rural residential house](#)"

Oral Presentation at the First International Conference on Energy Management in Building and Related Technologies: "[The effect of flat roofing materials on Building Heating Energy Consumption \(Isfahan Case Study\)](#)"

Selected Academic Projects

Review Papers

- Participated peer review manuscripts "[UIA World Congress of Architects \(2022\)](#)"
- Invited peer review of a manuscript at "[Journal of Solar Energy Research \(JSER\)](#)"
- Invited peer review of a manuscript at "[Case studies in thermal engineering](#)" Q1 journal
- Invited peer review of a manuscript at "[Energy and Buildings](#)" Q1 Journal
- Invited peer review of a manuscript at "[Building and Environment](#)" Q1 Journal
- Invited peer review of a manuscript at "[Frontiers of Architectural Research](#)" Q1 Journal
- Invited peer review of a manuscript at "[Journal of Building Engineering](#)" Q1 Journal
- Invited peer review of a manuscript at "[Energies](#)" Q1 Journal
- Invited peer review of a manuscript at "[International Journal of Geo-Information \(IJGI\)](#)" Q1 Journal
- Invited peer review of a manuscript at "[Sustainability](#)" Q1 Journal
- Invited peer review of a manuscript at "[Intelligent Buildings International](#)" Q2 Journal

- Invited peer review of a manuscript at "[Discover Cities](#)" Q1 Journal

Certificates

- Ranked 35th in the national university entrance exam among nearly 10,000 participants for M.S. degree (2017)
- Ranked 1400th in the entrance exam of the national university in the field of mathematics and physics (2011)
- Certificate for completing the course "[HCIXI: Human-Computer Interaction I: Fundamentals & Design Principles](#)" by Georgia Institute of Technology (2023)
- Certificate for completing the course "[Data Science for Construction, Architecture and Engineering](#)" by National University of Singapore (2020)
- Certificate for completing the course "[Applied AI with Deep Learning](#)" by IBM (2020)
- Certificate for completing the course "[Introduction to C# Programming and Unity](#)" by University of Colorado (2020)
- Certificate for completing the course "[An Introduction to Consumer Neuroscience & Neuromarketing](#)" by Copenhagen Business School (2023)
- Certificate for completing the course "[Introduction to Sustainability](#)" by University of Illinois (2020)
- Certificate for completing the course "[Comfort and Health in Buildings](#)" by Delft University of Technology (2021)
- Certificate for completing the course "[Zero-Energy Design: an approach to make your building sustainable](#)" by Delft University of Technology (2020)
- Certificate for completing the course "[Energy Supply Systems for Buildings](#)" by Delft University of Technology (2020)
- Certificate for completing the course "[Efficient HVAC Systems](#)" by Delft University of Technology (2021)
- Certificate for completing the course "[Introduction to Indoor Air Quality](#)" by The Hong Kong University of Science and Technology (2020)
- Certificate for completing the course "[One Click LCA Construction LCA Bootcamp 2023](#)" by One Click LCA Academy (2023)
- Certificate for completing the course "[One Click LCA EPD Bootcamp 2023](#)" by One Click LCA Academy (2023)
- Certificate for completing the course "[One Click LCA Summer School 2022](#)" by One Click LCA Academy (2022)
- Certificate for completing the course "[Energy Economics, Environment, and Policy](#)" by Asian Development Bank Institute
- Certificate for completing the course "[A Sustainable Earth](#)" by Arizona State University (2021)
- Certificate for completing the course "[Urban Climate: Keeping Cities Livable with Climate Research](#)" by Arizona State University (2020)
- Certificate for completing the course "[Solar Decathlon Building Science Course](#)" by U.S. Department of Energy (2019)
- Certificate for completing the course "[Prefabricated Construction](#)" by RDH Building Science (2019)
- Certificate for completing the course "[Grasshopper Essential Training](#)" by LinkedIn Learning (2020)
- Certificate for completing the course "[Glazing and Building Performance](#)" by RDH Building Science (2019)
- Certificate for completing the course "[Google Cloud Fundamentals: Core Infrastructure](#)" by Google Cloud (2020)
- Certificate for completing the course "[Large Building Airtightness](#)" by RDH Building Science (2020)
- Certificate for completing the course "[Planning for Healthy and Happy Communities](#)" by Arizona State University (2020)
- Certificate for completing the course "[Cars in Cities: Challenges and Alternatives](#)" by Arizona State University (2020)

Work Experiences

Teaching

- Adjunct Professor at "[Khavaran University \(Institute of Higher Education\)](#)" 2022
- Adjunct Professor at "[University of Kurdistan](#)" 2023
- Instructor at "[UpGreenGrade](#)" Institute 2020 - Now
- Instructor at "[Mehraz 8](#)" Institute 2017-2018

- Instructor at **ModernMehrazAsia** (Iran Technical and Vocational Training Organization (I.R.T.V.T.O)) 2022
- Sustainability Consultant at “**Organization for Renovation, Development, and Equipping of Schools in Iran**”
- Sustainability Consultant at “**UpGreenGrade**” Institute

Mentoring

- Achieve rank 3 as Mentor for “**U.S. Department of Energy Solar Decathlon**” form **Tehran University of Art**

Social activity

- Secretary of the (college) students' scientific association in **Civil Engineering at Islamic Azad University of Mashhad**

Languages

- Persian: **Native**
- English: **Fluent**
- Italian: **A2**
- French: **A1**

Additional Links

Grasshopper Plugin: [BPSimulation Weather File Tools](#)

Grasshopper Plugin: [ChameleonPCM](#)