Mahyar Tourchi Moghaddam
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I am an associate professor of Software Engineering at SDU. My research involves human-oriented software engineering, software architecture, cloud computing, and control of self-adaptive systems, mainly in the Internet of Things domain. I developed a novel approach to the Internet of Behaviors (IoB) design, which uses intelligent connected systems to gather data and further impact human behavior and decision-making. I teach and supervise projects in mobile software development and cloud computing. I frequently organize academic events and act as a program committee member and reviewer in various scientific communities, especially software engineering and human-computer interaction. I have experience managing and participating in national and EU projects in Italy, France, Sweden, and Denmark.

Employment

- University of Southern Denmark (Denmark) February 2024 - Now, *Associate Professor of Software Engineering*

- University of Southern Denmark (Denmark) August 2021 - January 2024, *Assistant Professor of Software Engineering*

- **INRIA Grenoble Rhône-Alpes (France)** Feb 2020 - July 2021, *Postdoc*
◊ Self-adaptive Middleware Support for Smart Grid
◊ Support for IoT/CPS, EU Project: CPS4EU
◊ *Supervisor:* Eric Rutten

- **University of Grenoble Alpes (France)** Jan 2019 - March 2019, *Research fellow*
◊ Agent-based Modeling of IoT Systems
◊ *Supervisor:* Julie Dugdale

- **Malmo University (Sweden)** Dec 2017 - June 2018, *Research Fellow*
◊ IoT Software Architecture, *Project: IoTArch* (Software Center Project)
◊ *Collaborators:* Romina Spalazzese, Paul Davidsson, Ivica Crnkovic

- **University of Montréal, CIRRELT (Canada)** Oct 2015 - Jun 2016, *Postgraduate Researcher*
◊ Stochastic Network Design

Education

- University of L'Aquila (Italy) Oct 2016 - May 2020, *Industrial PhD*
◊ Information Engineering and Computer Science: IoT and Big Data
◊ *Thesis Title:* IoT-based Emergency Evacuation Systems
◊ *Supervisors:* Henry Muccini (main advisor), Claudio Arbib (co-advisor), Ivica Crnkovic (EU advisor, Sweden)
◊ *Company:* FabbricaDigitale

- Politecnico di Torino (Italy) Aug 2013 - Oct 2016, *Master of Science*
◊ Industrial Engineering and Management
◊ *Thesis Title:* Green Synchromodal Parcel Freight Transport
◊ *Supervisor:* Guido Perboli

Grants Obtained

- Energi Fyn Udviklingsfond 2023 Funds (Leader), amounting 296,000 DKK

- Digital Research Centre Denmark (DIREC) Explore Project Funds 2022-2023 (Leader), amounting 350,000 DKK

- Postdoc Fellowship under CPS4EU horizon project, 2020-2021

- EU Industrial PhD Fellowship, 2016-2020

- PhD Erasmus+ Scholarship, 2019

- MSc Erasmus+ Scholarship 2015

- Conferences grants, e.g., PRIMA 2019

Grants Application Experience

- **Research Fund Denmark (DFF)** Independent Research Funds Green Transition 2023 (Leader)
◊ Topic: Energicca: Energy-Efficient Software Execution via Adaptive Edge-Cloud Continuum
◊ Partners: SDU (DK), Kiel University (DE), Inspari A/S (DK)
◊ Awaiting evaluation results

- **Innovation Fund Denmark** (IFD) Grand Solutions 2023: Green research, technology and innovation (I was PI and managed the consortium)
◊ *Topic:* Nudge2Green: Understanding and impacting consumer behavior towards food sustainability
◊ *Partners:* University of Southern Denmark, Aarhus University, University of Copenhagen, Food Innovation Center, Heco et al Aps, Raptor Services A/S, Kombination ApS, Nemlig.com A/S, MLDK, Branded Manufactures Association.
◊ Project received excellent evaluation of five (on a 1-6 scale), but is not selected for funding
◊ Planned resubmission of improved version to: IFD 2024

- **IFD Innomission Trace,** pool 2 application, 2023 (I was PI and managed the consortium)
◊ *Topic:* SmartWardrobe: A Data-Driven Fashion Recommendation System for Sustainability
◊ *Partners:* University of Southern Denmark, Aalborg University, Design School Kolding, Lifestyle & Design Cluster, Rentista, Fjong, Tekstilrevolutionen, Kruse-Vask
◊ Project received good evaluation of 4.8 (on a 1-6 scale), but is not selected for funding
◊ Planned resubmission of improved version to: IFD Innomission Pool 3, 2024

- **EU Horizon Proposal** 2023, HORIZON-CL4-2023-DATA-01-04, (Partner)
◊ *Topic:* BALANCER – Intelligent Energy-Aware Resource Balancing
◊ *Partners:* Jožef Stefan Institute, University of Ljubljana, Solvesall, Vienna University of Technology, Kiel University, University of Southern Denmark, Energinet, Sistemas avanzados de tecnologia SA, University of L'Aquila, Seeweb SRL
◊ Project received fair evaluation of 11 (on a 15 scale), but is not selected for funding
◊ Planned resubmission of improved version to: Horizon call on IoT & Data, March 2024

Projects

- *I4.0 DIREC robotic mobility (DigiTech).* Denmark, 2022-now
- *I4.0 IExpRoBI - Industry 4.0 lab facilities for Experimenting with Spatial and Electricity Consumption Data.* Denmark, 2022-2023
◊ For these two projects, together with two students I hired (and colleagues from SDU Software and SDU Robotics), we worked on establishing an IoT system including 3D cameras and UWB sensors to detect human and robot movements and employ routing algorithms that reduce conflicts in manufacturing environments.

- *RobotArch: Edge-Cloud Architectures for Energy-Efficient Industrial Robotics (Funded by EnergiFyn).* Denmark 2023-now
◊ I hired two students on this project, and we are working on process offloading over edge and cloud to improve the energy efficiency of industrial robotics applications. The project has a literature and tool review, simulation, and real-life implementation and experimentation steps that utilize deep reinforcement learning for AI distribution supervision.

- *DIREC Cyber-Physical Systems with Human in the Loop.* Denmark, 2022-2023.
◊ I hired two students for this project, where we developed an AI-based engine for adapting software architecture and user interfaces to individual and collective human behaviors. We also performed a literature review together with CBS on the topic and conducted industrial semi-structured interviews to evaluate our results.

- *CPS4EU. European Project on cyber-physical systems for European industries.* France, 2020-2021.
◊ I worked with project partners on the adaptive middleware support for cyber-physical systems, performing both technical and deliverable writing tasks. I collaborated closely with RTE, the French TSO, on their smart grid infrastructure towards distributing their control system in their substations.

- *VASARI. Italian project on cultural heritage and emergency management.* Italy, 2018-2020.
◊ This project aimed at creating a digital infrastructure for Italian museums to build a new cultural space in which the

physical spaces of museums and historical sites are integrated into the digital space of cultural contents and services and interconnected with each other in a multi-site logic. I managed both technical and writing parts of the software architectures and IoT systems for crowd management.

- *Nexpecto. Italian project on queue management of Uffizi Galleries.* Italy, 2016 - 2020.
◊ This project aimed at using IoT to provide an intelligent crowd monitoring system that predicts the crowd and flow of people inside and outside the museum and adjusts the booking system accordingly. I worked on human behavior impacts on the IoT system adaptation.

- *IoTArch. Swedish Software Center project on software architectures for IoT*. Sweden, 2018.
◊ I worked with Axis, Ericsson, and Siemens companies on IoT architectural styles definitions for various use-cases, specially disaster management.

- *Venice Crowd Monitoring. Italian project on crowd monitoring*. Italy, 2019.
◊ I conducted limited work during my internship to understand people's movement behavior in Venice's main square.

Organization and Community Activities

Organizing Member
- Organizing Chair of IEEE/ACM International Conference on Software Architecture (ICSA 2025)
- IEEE/ACM International Conference on Software Architecture (ICSA 2023)
- ACM International Conference on Engineering Interactive Computing Systems (EICS 2024)
- European Conference on Software Architecture (ECSA 2020)
- International Conference on Fog and Mobile Edge Computing (FMEC 2023)
- International Workshop on Quality in Software Architecture (QUALIFIER 2023)
- IEEE International Workshop on Software Engineering for Industrial Cyber-Physical Systems (SE4ICPS 2021)
- International Workshop on Internet of Things for Emergency Management (IoT4Emergency)
- Italian Conference on ICT for Smart Cities & Communities (ICiTies 2018)
- Digital Tech Summit 2022, 2023

Program Committee and Reviewing
I act as a program committee member/reviewer in various scientific communities/journals such as:
- IEEE/ACM International Conference on Software Architecture (ICSA 2025)
- 5th International Workshop on Cloud, IoT and Fog Systems (CIFS 2023),
- Hawaii International Conference on System Sciences (HICSS 2022, HICSS 2023),
- International Conference on Information Systems Development (ISD 2023),
- IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS 2020),
- 20th International Workshop on Multi-Agent-Based Simulation (MABS 2019),
- International Workshop on Advanced DevOps, Analysis Tools and Reengineering Practices for AI-based, Cyber-physical, and Distributed Systems (DevOps4IoT 2022),
- International Conference on Internet of things, Data and Cloud Computing (ICC'21),
- International Conference on Digital Telecommunications (ICDT'21),
- European Conference on Software Architecture (ECSA2020),
- International Conference on Internet Monitoring and Protection (ICIMP'21),
- Information Systems Journal (Elsevier) 2020 and 2021,
- ACM Transactions on Autonomous and Adaptive Systems (TAAS), 2021...

Giving Frequent Seminars
I frequently present my research at conferences (20+ so far), such as the International Conference on Software Architecture, the European Conference on Software Architecture, and the ACM Symposium on Engineering Interactive Computing Systems. I also present at Danish scientific events such as the Digital Tech Summit and DIREC. I give presentations to my team members at SDU, industrial partners, and other collaborating academic institutions.

Industrial Collaborations

Connecting with industry, presenting my application-oriented ideas, and attracting them for research and teaching activities are among my key capabilities. I have a network of 1500+ industry practitioners, and I would like to mention the following example for which I created a network of industry collaborators.

Cloud Computing
I collaborate closely with major Cloud Providers participating in my teaching and research: Google Cloud, Amazon Web Services, Microsoft Azure, IBM, Oracle, Energinet, and Seaweb. I also have close collaboration with cloud customers such as Netcompany, DSB, Implement Consulting, Inspari, Nuvolaris, etc.

Food
I have close research and teaching collaborations with Food Sustainability companies such as Food Innovation Center, Heco et al. Aps, Raptor Services A/S, Kombination ApS, Nemlig.com A/S, MLDK, Branded Manufacturers Association.

Textile
I collaborate closely with companies active in the textile circular economy, such as Lifestyle & Design Cluster, Rentista, Fjong, Tekstilrevolutionen, and Kruse-Vask.

Teaching and Supervision

Pedagogical Activities / Certificates
- Lecturer Training Program [Started: Dec 2021 – Finalized: Oct 2023] at the University of Southern Denmark. Project: A Pedagogical Approach for Creating a Balance Between Theory and Practice in Applied Courses.
- Associate Professorship Qualification in France (qualification aux fonctions de maître de conférences) [Obtained: 2023 – Valid through 2027]
- Introduction to teaching and research [INRIA, France, 2020]

Teaching
- University of Southern Denmark (Denmark)
◊ 2023: Mobile Software Development (90 students) – Cloud Computing Continuum (80 students)
◊ 2022: Mobile Software Development (110 students) – Cloud Computing and Edge-Cloud Adaptive Architectures (155 students)
◊ 2021: Mobile Software Development (100 students)
- University Grenoble Alpes (France)
◊ 2020-2021: Software Engineering Courses: 60 students
- University of L'Aquila (Italy)
◊ 2016-2019: Software Engineering and Software and Software Architecture courses (30+ students)

Supervision
- University of Southern Denmark (Denmark)
◊ 2021-2023: BSc projects (30+ students), MSc theses (10 students)
- University Grenoble Alpes (France)
◊ 2021: MSc theses (1 student)
- University of L'Aquila (Italy)
◊ 2017-2020: BSc and MSc projects (3 students)

Examination
- Oral Exams: 150+ students
- Portfolio Exams: 500+ students
- Written Exams: 60+ students

Language
- Persian: Mother Tongue

- Italian: Near-native

- English: Fluent

- French: Basic, A2

- Danish: Basic, Level 3.2

- Arabic: Basic

Technical Skills
Here, I would like to mention a few examples of my technical skills:
- Skills in Cloud Computing: GCP, AWS, MS Azure
- Skills in Mobile development technologies: React Native, Android, Flutter.
- Skills in agent-based social simulation (PedSim, Gama).
- Knowledge of software engineering modeling languages (UML, CAPS).
- Skills in 3D modeling (Blender, Unity, CityEngine, SweetHome3D).
- Experience with project management tools (Microsoft Project, Primavera).
- Experience with optimization solvers (Cplex, Gurobi).
- Experience with emotions tracking in HCI.
- Experience with client application programming (Java, Python, C++).
- Skills in GIS (QGIS, ArcGIS).
- Experience with data analysis tools, statistical (SPSS, R), qualitative (Nvivo).
- Experience with SW performance modeling tools (JMT, Queuing Networks).

Sports Background

Italian Football Referee. 2013-2019 • Canadian Soccer referee. 2015-2016 • Certified in FIFA football management.

Publications

Google Scholar:
https://scholar.google.se/citations?hl=en&user=be0lMAoAAAAJ&view_op=list_works&authuser=1&sortby=pubdate

[1] Alipour, Mina, Mahyar T. Moghaddam, Karthik Vaidhyanathan, Tobias Kristensen, and Nicolai Krogager Asmussen. "Emotional Internet of Behaviors: A QoE-QoS Adjustment Mechanism." In International Conference on Human-Computer Interaction, pp. 3-22. Cham: Springer Nature Switzerland, 2023.

[2] Alipour, Mina, Mahyar T. Moghaddam, Karthik Vaidhyanathan, and Mikkel Baun Kjærgaard. "Emoticontrol: Emotions-based Control of User-Interfaces Adaptations." Proceedings of the ACM on Human-Computer Interaction 7, no. EICS (2023): 1-29.

[3] Alipour, Mina, Mahyar Tourchi Moghaddam, Karthik Vaidhyanathan, and Mikkel Baun Kjærgaard. "Toward Changing Users behavior with Emotion-based Adaptive Systems." In Proceedings of the 31st ACM Conference on User Modeling, Adaptation and Personalization, pp. 85-95. 2023.

[4] Tourchi Moghaddam, Mahyar, Andreas Edal Pedersen, William Walter Lillebroe Bolding, and Torben Worm. "A Performant and Secure Single Sign-On System Using Microservices." In Proceedings of the 38th ACM/SIGAPP Symposium on Applied Computing, pp. 1516-1519. 2023.

[5] Moghaddam, Mahyar T., Mina Alipour, and Mikkel Baun Kjærgaard. "User Interface and Architecture Adaption Based on Emotions and Behaviors." In 2023 IEEE 20th International Conference on Software Architecture Companion (ICSA-C), pp. 101-105. IEEE, 2023.

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[7] Moghaddam, Mahyar T., Henry Muccini, and Julie Dugdale. "Intelligent Building Evacuation: From Modeling Systems to Behaviors." In Disaster Management and Information Technology: Professional Response and Recovery Management in the Age of Disasters, pp. 111-129. Cham: Springer International Publishing, 2022.

[8] Alkhabbas, Fahed, Mohammed Alsadi, Sadi Alawadi, Feras M. Awaysheh, Victor R. Kebande, and Mahyar T. Moghaddam. "Assert: A blockchain-based architectural approach for engineering secure self-adaptive iot systems." Sensors 22, no. 18 (2022): 6842.

[9] Moghaddam, Mahyar T., Henry Muccini, Julie Dugdale, and Mikkel Baun Kjægaard. "Designing internet of behaviors systems." In 2022 IEEE 19th International Conference on Software Architecture (ICSA), pp. 124-134. IEEE, 2022.

[10] Moghaddam, Mahyar Tourchi, Eric Rutten, and Guillaume Giraud. "Hierarchical control for self-adaptive iot systems a constraint programming-based adaptation approach." In HICSS 2022-Hawaii International Conference on System Sciences, pp. 1-10. 2022.

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[12] Vaidhyanathan, Karthik, Antonio Bruno, Eleonora Mendola, Filippo Mignosi, Mahyar T. Moghaddam, Henry Muccini, and Monica Nesi. "A Service for Supporting Digital and Immersive Cultural Experiences." Italian Conference on ICT for Smart Cities and Communities (2021).

[13] Abughazala, Moamin B., Mahyar T. Moghaddam, Henry Muccini, and Karthik Vaidhyanathan. "Human behavior-oriented architectural design." In European Conference on Software Architecture, pp. 134-143. Cham: Springer International Publishing, 2021.

[14] Dugdale, Julie, Mahyar T. Moghaddam, and Henry Muccini. "Iot4emergency: Internet of things for emergency management." ACM SIGSOFT Software Engineering Notes 46, no. 1 (2021): 33-36.

[15] Dugdale, Julie, Mahyar T. Moghaddam, and Henry Muccini. "Human behaviour centered design: developing a software system for cultural heritage." In Proceedings of the ACM/IEEE 42nd International Conference on Software Engineering: Software Engineering in Society, pp. 85-94. 2020.

[16] PhD Thesis: Tourchi Moghaddam, Mahyar. "IoT-based Emergency Evacuation Systems." arXiv e-prints (2020): arXiv-

2005.

[17] Moghaddam, Mahyar T., Eric Rutten, Philippe Lalanda, and Guillaume Giraud. "Ias: an iot architectural self-adaptation framework." In Software Architecture: 14th European Conference, ECSA 2020, L'Aquila, Italy, September 14–18, 2020, Proceedings 14, pp. 333-351. Springer International Publishing, 2020.

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[19] Arbib, Claudio, Davide Arcelli, Julie Dugdale, Mahyar T. Moghaddam, and Henry Muccini. "Real-time emergency response through performant IoT architectures." In International Conference on Information Systems for Crisis Response and Management (ISCRAM). 2019.

[20] Muccini, Henry, Claudio Arbib, Paul Davidsson, and Mahyar Tourchi Moghaddam. "An iot software architecture for an evacuable building architecture." Hawaii International Conference on System Sciences (HICSS) 2019.

[21] Dugdale, Julie, Mahyar T. Moghaddam, Henry Muccini, and Hrishikesh Narayanankutty. "A combined netflow-driven and agent-based social modeling approach for building evacuation." In PRIMA 2019: Principles and Practice of Multi-Agent Systems: 22nd International Conference, Turin, Italy, October 28–31, 2019, Proceedings 22, pp. 460-468. Springer International Publishing, 2019.

[22] Arbib, Claudio, Mahyar T. Moghaddam, and Henry Muccini. "Iot flows: a network flow model application to building evacuation." A View of Operations Research Applications in Italy, 2018 (2019): 115-131.

[23] Moghaddam, Mahyar Tourchi, and Henry Muccini. "Fault-Tolerant IoT: A Systematic Mapping Study." In Software Engineering for Resilient Systems: 11th International Workshop, SERENE 2019, Naples, Italy, September 17, 2019, Proceedings 11, pp. 67-84. Springer International Publishing, 2019.

[24] Moghaddam, Mahyar Tourchi. "IoT-based urban security models." In Proceedings of the 40th International Conference on Software Engineering: Companion Proceeedings, pp. 462-463. 2018.

[25] Arbib, Claudio, Henry Muccini, and Mahyar Tourchi Moghaddam. "Applying a network flow model to quick and safe evacuation of people from a building: a real case." RSFF 18 (2018): 50-61.

[26] Muccini, Henry, Romina Spalazzese, Mahyar T. Moghaddam, and Mohammad Sharaf. "Self-adaptive IoT architectures: An emergency handling case study." In Proceedings of the 12th European Conference on Software Architecture: Companion Proceedings, pp. 1-6. 2018.

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