Approved by the Regents
May 16, 2024

PROMOTION RECOMMENDATION
The University of Michigan-Dearborn
College of Engineering and Computer Science

Alireza Mohammadi, assistant professor of electrical and computer engineering, Department of Electrical and Computer Engineering, College of Engineering and Computer Science, is recommended for promotion to associate professor of electrical and computer engineering, with tenure, Department of Electrical and Computer Engineering, College of Engineering and Computer Science.

Academic Degrees:

Ph.D.	2016	Electrical and Computer Engineering, University of Toronto, Toronto, Canada
M.S.	2011	Electrical and Computer Engineering, University of Alberta, Edmonton, Canada
B. S.	2009	Electrical Engineering, Sharif University of Technology, Tehran, Iran

Professional Record:

2018-present	Assistant Professor, University of Michigan-Dearborn, Dearborn, MI
2016-2018	Post-doctoral Research Associate, University of Texas at Dallas, Dallas, TX

Summary of Evaluation:

Teaching: Professor Mohammadi is rated excellent in teaching. He has taught five different courses since joining the department in 2018, receiving an instructor evaluation of 4.7/5. He has developed two new courses and significantly redesigned two additional courses. He has advised seven masters' students and five doctoral students, two of whom have successfully defended. One of his outstanding contributions is his efforts to incorporate sustainability concepts into the engineering curriculum across the college, supported by an award from the Lemelson Foundation.

Research: Professor Mohammadi is rated excellent in research. He has built an impressive research program, spanning robotics, control systems, and cyber-physical systems. He has published 20 journal papers since coming to the university, many with his Ph.D. students. Professor Mohammadi received a total of 19 grants for over $1.7 million in funding since 2018, 12 of which as the principal investigator. Major funding sources include the National Science Foundation, Ford, and the Lemelson Foundation. Professor Mohammadi is establishing himself as a recognized expert in robotics. Based on his publications, number of students advised, current grant awards, and pending proposals, there is every reason to believe that Professor Mohammadi's research will continue to grow in the future.

Recent and Significant Publications:

A. Mohammadi, H. Malik, and M. Abbaszadeh, "Vehicle Lateral Motion Dynamics Under Braking/ABS Cyber-Physical Attacks," *IEEE Transactions on Information Forensics & Security*, vol. 18, pp. 4100-4115. DOI: 10.1109/TIFS.2023.3293424 (SJR Q1, Impact Factor: 7.231, *Top 5 Computer Security & Cryptography*).

A. Kacem, K. Zbiss, P. Watta, and A. Mohammadi, "Wave Space Sonification of the Folding Pathways of Protein Molecules Modeled as Hyper-Redundant Robotic Mechanisms," *Multimedia Tools and Applications (Springer Nature)*, pp. 1-21, 2023. DOI: 10.1007/s11042-023-15385-y (SJR Q1, Impact Factor: 2.577, *Top 5 Multimedia*).

A. Mohammadi and M. W. Spong, "Chetaev Instability Framework for Kinetostatic ComplianceBased Protein Unfolding," *IEEE Control Systems Letters*, vol. 6, pp. 2755–2760, 2022. (SJR Q1, Impact Factor: 2.77).

A. Mohammadi and M. W. Spong, "Quadratic Optimization-Based Nonlinear Control for Protein Conformation Prediction," *IEEE Control Systems Letters*, vol. 6, pp. 373–378, 2022. (SJR Q1, Impact Factor: 2.373).

A. Mohammadi and M. W. Spong, "Integral Line-of-Sight Path Following Control of Magnetic Helical Microswimmers Subject to Step-Out Frequencies," *Automatica*, vol. 128, p. 109554, 2021. (SJR Q1, Impact Factor: 5.944, *Top 5 Automation & Control Theory*).

J. C. Horn, A. Mohammadi, K. A. Hamed, and R. D. Gregg, "Nonholonomic Virtual Constraint Design for Variable-Incline Bipedal Robotic Walking," *IEEE Robotics and Automation Letters*, vol. 5, no. 2, pp. 3691–3698, 2020. (SJR Q1, Impact Factor: 3.741, Top 5 Robotics).

S. Kumar, A. Mohammadi, D. Quintero, S. Rezazadeh, N. Gans, and R. D. Gregg, "Extremum Seeking Control for Model-Free Auto-Tuning of Powered Prosthetic Legs," *IEEE Transactions on Control Systems Technology*, vol. 28, no. 6, pp. 2120–2135, 2020. (SJR Q1, Impact Factor: 5.312, *Top 5 Automation & Control Theory*).

Service: Professor Mohammadi is rated excellent in service. He has been active on committees within the university at the college and department levels, and he is active in professional societies. He has served on six college-level committees and nine department-level committees. He served as an editorial member for the American Control Conference and Institute of Electrical and Electronics Engineers Robotics and Automation Society/Engineering in Medicine and Biology Society International Conference on Biomedical Robotics and Biomechatronics, as well as serving as a conference session organizer or chair on eight occasions and served as a reviewer for 12 different journals.

External Reviewers:

Reviewer A: "He is making significant contributions in research and scholarship – he has demonstrated his ability to find new problems, compete for funding, mentor graduate students, and publish papers in high-quality journals."

Reviewer B: "Dr. Mohammadi has served as both PI and co-PI and received funding for projects both as an individual and as part of a team. Dr. Mohammadi has published in high-quality outlets including several IEEE journals, IROS, ACC, CDC, and AutoSec. In total, he has published 20 journal articles, 18 conference articles, and 1 book review."

Reviewer C: "Prof. Mohammadi has established an excellent record of contributions during his time as an assistant professor. I am impressed by his ability to apply solid theoretical concepts to address important practical problems across a broad range of domains. I am excited to see the new lines of work that will come out of the foundations that he is currently establishing."

Reviewer D: "Dr. Mohammadi expanded his research focus to work on non-robotics related applications that are still inspired by robotics. Specifically, his recent work on modeling protein molecules as hyper redundant robotic arms with many degrees-of-freedom provides a departure from his classic work to a new application, which is what you want to see from an assistant professor: the ability to branch out to different research topics and collaborate with domain experts—while still obtaining research funding and publishing papers revolving these new topics"

Reviewer E: "Dr. Alireza Mohammadi's exceptional contributions to research, teaching, and service are a testament to his dedication and influence in the field of robotics. His groundbreaking work in magnetic helical microswimmers, sonification techniques, and collaborative robots highlights his diverse expertise."

Summary of Recommendation: Professor Mohammadi is an excellent faculty member in all aspects of teaching, research, and service. We are very pleased to recommend, with strong support of the College of Engineering and Computer Science Executive Committee, Alireza Mohammadi for promotion to associate professor of electrical and computer engineering, with tenure, Department of Electrical and Computer Engineering, College of Engineering and Computer Science.

Ghassan Kridli, Dean
College of Engineering and Computer Science

Domenico Grasso, Chancellor
University of Michigan-Dearborn

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