HOSSEIN MIRINEJAD

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EDUCATION

2016	Ph.D., Electrical Engineering, University of Louisville, Louisville, KY, USA
2008	M.S. (with Honors), Mechatronics Engineering, K. N. Toosi University of Technology, Tehran, Iran
2006	B.S., Electrical Engineering – Control, Iran University of Science and Technology, Tehran, Iran

APPOINTMENTS

2019-present	Assistant Professor, College of Aeronautics and Engineering, Kent State University, Kent, OH
2017-19	Research Fellow, US Food and Drug Administration (FDA), Silver Spring, MD
2016-17	Postdoctoral Fellow, University of Michigan, Ann Arbor, MI

RESEARCH INTERESTS

- Healthcare Automation and Autonomous Medical Devices
- Optimal Control Theory and Applications
- Design of Autonomous Control Algorithms for Robotic Systems

SELECTED HONORS AND AWARDS

2024–2029	NSF CAREER Award, National Science Foundation
2024–2025	Healthy Communities Research Institute (HCRI) Faculty Fellowship, Kent State University
2019	Smart and Connected Health Aspiring PI Travel Award, National Science Foundation (NSF)
2017–2019	Oak Ridge Institute for Science and Education (ORISE) Research Fellowship at U.S. FDA
2017	Postdoctoral Conference Travel Award, National Postdoctoral Association (NPA)
2016	Graduate Dean's Citation (top 10%), University of Louisville
2016	Outstanding Graduate/Professional Student Award, University of Louisville
2016	Doctoral Dissertation Completion Award, University of Louisville
2015	Theobald Scholarship Award, University of Louisville
2015	American Control Conference (ACC) Travel Award, ACC Organizing Committee, Chicago, IL
2015	Graduate Student Council Research Scholarship, University of Louisville
2012	IEEE EnergyTech Conference Travel Award, EnergyTech Organizing Committee, Cleveland, OH
2011–2013	Doctoral Fellowship, University of Louisville

RESEARCH FUNDING

2024–2029	**Role:** PI, **Funding:** NSF Faculty Early Career Development Program (CAREER), **Amount:** $563,536 **Title:** CAREER: Towards Safe and Interpretable Autonomy in Healthcare
2022–2025	**Role:** PI, **Funding:** NSF Engineering Research Initiation (ERI), **Amount:** $208,000 **Title:** ERI: Precision Dosing in Critical Care: An Automated Modeling and Control Approach
2022–2024	**Role:** Co-PI, **Funding**: Intel through Lorain County Community College, **Amount:** $94,000 **Title:** Intel Ohio TechNet NE Ohio (OTN-NEO) Semiconductor Workforce Consortium
2023–2026	**Role:** Key Personnel, **Funding**: National Science Foundation (NSF) REU, **Amount:** $402,740 **Title:** REU Site: Research Experience for Undergraduates in Robotics and Autonomous Systems
2021–2022	**Role:** PI, **Funding:** National Science Foundation's Innovation Corps (I-Corps), **Amount:** $2,500 **Title:** The NSF I-Corps Local Site at the University of Akron, Robot-Assisted Surgery Devices
2021–2022	**Role:** PI, **Funding:** National Science Foundation's Innovation Corps (I-Corps), **Amount:** $2,500 **Title:** The NSF I-Corps Local Site at the University of Akron, Manipulator Tracking

RECENT PUBLICATIONS

1. M. Ali and **H. Mirinejad**, "Robust Tracking Control of Flexible Manipulators using Hybrid Backstepping/ Nonlinear Reduced-Order Active Disturbance Rejection Control," *ISA Transactions*, vol. 149, May 2024.
2. B Kharabian and **H. Mirinejad**, "Synchronization of Multiple Non-Identical Fractional-Order Flexible Link Manipulators via Adaptive Neuro-Fuzzy Sliding Mode Control," *IFAC-PapersOnLine*, vol. 58, no. 28, 2024.
3. E. Estiri and **H. Mirinejad**, "Variational Autoencoder-Based Model Predictive Control for Automated Fluid Resuscitation," *IEEE-EMBS Intern. Conf. Biomed. Health Inform. (BHI'24),* Houston, TX, Nov. 2024.
4. E. Estiri and **H. Mirinejad**, "Bayesian Variational Autoencoders for Out-of-Distribution Detection in Physiological Modeling: A Case Study in Fluid Therapy," *IEEE Eng. Med. Bio. Conf. (EMBC),* Orlando, FL, July 2024.
5. E. Estiri and **H. Mirinejad**, "Closed-Loop Control of Fluid Resuscitation Using Reinforcement Learning," *IEEE Access*, vol. 11, pp. 140569-140581, Dec. 2023.
6. B. Kharabian and **H. Mirinejad**, "Fuzzy Lyapunov Exponents Placement for Chaos Stabilization," *Physica D, Nonlinear Phenomena*, vol. 445, Mar. 2023.
7. E. Estiri and **H. Mirinejad**, "Precision Dosing in Critical Care: Application of Machine Learning in Fluid Therapy," *IEEE Conference on Digital Health (ICDH)*, Chicago, IL, July 2-8, 2023.
8. B. Kharabian and **H. Mirinejad**, "Switched Combination Synchronization of Nonidentical Fractional-Order Chaotic Systems Using Neuro-Fuzzy Sliding Mode Control," *Am. Control Conf. (ACC),* San Diego, CA, 2023.
9. E. Estiri and **H. Mirinejad**, "Robust Nonlinear State Space Model Identification for Hemorrhage Resuscitation," accepted for publication, *IEEE Intern. Conf. Biomed. Health Inform. (BHI 23),* Pittsburgh, PA, Oct. 2023.
10. E. Estiri and **H. Mirinejad**, "Nonlinear State Space Model Identification of Hemorrhage Resuscitation using Autoencoder Learning and Gaussian Inference," *IEEE Conf. Syst. Man Cybern. (SMC 23),* Honolulu, HI, Oct. 2023.
11. B. Kharabian and **H. Mirinejad**, "Switched Projective Compound Combination Synchronization of Chaotic Systems via Neuro-Fuzzy Sliding Mode Control," *IEEE Conf. Syst. Man Cybern. (SMC 23),* Honolulu, HI, Oct. 2023.
12. E. Estiri and **H. Mirinejad**, "Model-Free Reinforcement Learning for Automated Fluid Administration in Critical Care," *IEEE Intern. Conf. Biomed. Health Inform. (BHI 22)*, Ioannina, Greece, Sep. 2022.
13. B. Kharabian and **H. Mirinejad**, "Fuzzy Feedback Control of Chaotic Systems via Lyapunov Exponents Placement," *IEEE International Conference on Electrical, Computer, and Energy Technologies*, Prague, Czech Republic, Jul. 20-22, 2022.
14. **H. Mirinejad,** T. Inanc, J. M. Zurada, "Radial Basis Function Interpolation and Galerkin Projection for Direct Trajectory Optimization and Costate Estimation," *IEEE/CAA J. Automatica Sinica*, vol. 8, pp. 1380-1388, 2021.

MENTORING EXPERIENCE

2024–present	**Levent Bozcu**, Ph.D. Student, Mechatronic Engineering, Kent State University
2022–present	**Elham Estiri**, Ph.D. Student, Mechatronic Engineering, Kent State University
2025–present	**Richard Marsico**, Undergraduate Student, Aerospace Engineering, Kent State University
2023–2025	**Nicholas Baird,** Master's Student, Mechatronics Engineering, Kent State University
Summer 2024	**Troy Sellman**, Undergraduate Student, Mechatronics Engineering, Kent State University
2020–2024	**Behrouz Kharabian**, Ph.D. Student, Mechatronic Engineering, Kent State University
2023–2024	**Matthew Larrivee**, Undergraduate Student, Mechatronics Engineering, Kent State University
Spring 2024	**Lucas Faccio**, Undergraduate Student, Mechatronics Engineering, Kent State University
2022–2023	**Dylan Languis**, Master's student, Aerospace Engineering, Kent State University
2022–2023	**Stephen Connor**, Undergraduate Student, Aerospace Engineering, Kent State University
Summer 2022	**Mohammed Alkharusi**, Undergrad Student, Mechatronics Engineering, Kent State University
Summer 2022	**Mustafa Al-Senaidi**, Undergraduate Student, Mechatronics Engineering, Kent State University
Spring 2022	**Shubham H. Rahangdale**, Master's Student, Mechatronics Engineering, Kent State University
2020–2021	**Ryan Chema**, Undergraduate Student, Mechatronics Engineering, Kent State University
2020–2021	**Dr. Mohammed Ali**, Postdoctoral Associate, Kent State University
2020–2021	**Jacob Grant**, Undergraduate Student, Aerospace Engineering, Kent State University
2020–2021	**Saroj Dahal**, Undergraduate Student, Mechanical Engineering Technology, Kent State University
2018–2019	**Anna Packy**, Undergraduate Student, Mechanical Engineering, University of Maryland
2016–2017	**Yue Tang**, Master's Student, Mechanical Engineering, University of Michigan
2016–2017	**Kshitij Jain**, Master's Student, Mechanical Engineering, University of Michigan
2015–2016	**David Bergman**, Undergraduate Student, Mechanical Engineering, University of Louisville
2015–2016	**Olivia McGee**, Undergraduate Student, Mechanical Engineering, University of Louisville

PROFESSIONAL SERVICES AND ENGAGEMENT

2020–present **Lead Reviewer**
Served on various NSF panels in the areas of controls, machine learning, and medical autonomy

2020–present **Lead Faculty**
Lead and point of contact for Mechatronics M.S. and Ph.D. programs at Kent State University

2020–present **Lead Faculty**
Lead and point of contact for three undergraduate programs at Kent State University: Mechanical Engineering Tech., Mechatronics Engineering, and Mechatronics Engineering Tech.

2024–present **Faculty Co-Chair**
Kent State University Transfer Credit Committee

2019–2022 **Committee Chair**
- Created and chaired the Mechatronics Committee to develop mechatronics graduate programs
- Developed the curriculum and full proposal for new graduate programs (both M.S. and Ph.D.)
- Co-drafted the HLC application and response to comments for new graduate programs

June 2023 **Session Chair**
Variable-structure/Sliding-mode Control Session, American Control Conference, San Diego, CA

2022–present **Advisory Board Member**
Kent State University Academy of Advanced Technology and Engineering of Firestone CLC

2023–present **IEEE Technical Committees**
- Engineering in Medicine & Biology Society Technical Committee on Biomed. & Health Informatics
- Engineering in Medicine & Biology Society Technical Committee on Biomedical Signal Processing

2022 **Invited Speaker**
- Research and Innovation Forum, Kent State University, Sept. 2022
- College of Aeronautics and Engineering Graduate Seminar, Kent State University, March 2022

2019–present **Active Reviewer for Journals and Conferences**
- ASME Journal of Dynamic Systems, Measurement, and Control
- IEEE Transactions on Industrial Electronics
- IEEE Transactions on Systems, Man, and Cybernetics: Systems
- IEEE Control Systems Letters
- IEEE Access
- ISA Transactions
- Transactions of the Institute of Measurement and Control
- Nonlinear Dynamics
- Biocybernetics and Biomedical Engineering
- Advances in Space Research
- Complications
- American Control Conference (ACC)

PROFESSIONAL MEMBERSHIP

2022–present IEEE Senior Member
2014–present IEEE Young Professionals Member
2020–present IEEE Control Systems Society Member
2020–present IEEE Engineering in Medicine and Biology Society Member
2022–present IEEE Systems, Man, and Cybernetics Society Member
2022–present Advisory Board Member for the Academy of Advanced Technology and Engineering at Firestone
2021–2022 American Society of Mechanical Engineers (ASME) Member
2016–2022 IEEE Member
2012–2016 IEEE Student Member