Mohammadreza Kamaldar

Curriculum Vitae

Assistant Professor
Mechanical, Aerospace & Biomedical Engineering
College of Engineering
University of South Alabama

150 Student Services Dr.
Mobile, AL 36688, USA
Phone: +1 (251) 445-9227 | Cell: +1 (734) 486-9382
Email: mkamaldar@southalabama.edu | Webpage

Education

2013–2018	**Ph.D. in Mechanical Engineering** University of Kentucky, Lexington, KY
2009–2011	**M.S.E. in Mechanical Engineering** University of Tehran, Tehran, Iran
2005–2009	**B.S.E. in Mechanical Engineering** Shiraz University, Shiraz, Iran

Professional Experience

2025–Present	**Assistant Professor**, Mechanical, Aerospace & Biomedical Engineering Dept. University of South Alabama
2022–2024	**Postdoctoral Research Fellow**, Aerospace Engineering Dept. University of Michigan
2020–2022	**Postdoctoral Research Scholar**, Mechanical & Aerospace Engineering Dept. University of Kentucky
2019–2020	**Postdoctoral Research Fellow**, Aerospace Engineering Dept. University of Michigan
2013–2018	**Graduate Assistant**, Mechanical & Aerospace Engineering Dept. University of Kentucky
2012–2013	**Technical Instructor**, Mechatronics Engineering Dept. University of Tehran
2011–2012	**Research Engineer**, Center for Surface-Effect Craft Shiraz University
2009–2011	**Graduate Research & Teaching Assistant**, Mechanical Engineering Dept. University of Tehran

Research Experience

2023–2024	**Sampled-Data Global Stabilization with Control Constraints** University of Michigan Role: Post-doctoral Research Fellow Sponsor: NSF
2022-2023	**Adaptive & Nonlinear Model Predictive Control** University of Michigan Role: Post-doctoral Research Fellow Sponsor: ONR
2020–2022	**Almost Global Convergence in Discrete-Time Systems** University of Kentucky Role: Post-doctoral Research Scholar Sponsor: AFOSR
2019–2020	**Adaptive Digital PID Control for Nonlinear Systems** University of Michigan Role: Post-doctoral Research Fellow Sponsor: AFOSR & ONR
2019–2020	**Output-Feedback Control of Chain of Integrators with Arbitrary Zeros and Asymmetric Input Saturation** University of Michigan Role: Post-doctoral Research Fellow Sponsor: AFOSR & ONR
2014–2018	**Adaptive Sinusoidal Disturbance Rejection for Helicopter Vibration Reduction** University of Kentucky Role: Graduate Research Assistant Sponsor: Lord Corp.
2009–2013	**Motion Planning and Control for a Spherical Robot** University of Tehran Role: Graduate Research Assistant Sponsor: University of Tehran

Research Interests

- Nonlinear Model Predictive Control
- Adaptive Control for Autonomous Systems
- Robot Motion Planning and Control
- Decentralized Cooperative Control for Multi-Agent Systems
- Data Analysis and System Identification
- Mechatronics

Teaching Experience

2025–Present	**Instructor**, Mechanical, Aerospace & Biomedical Engineering Dept. University of South Alabama Courses: Fluid Mecahnics (Spring 2025)
2013–2017	**Teaching Assistant**, Mechanical & Aerospace Engineering Dept. University of Kentucky Courses: Control Systems (Fall 2013, Spring 2014, Fall 2015) Dynamic Systems (Spring 2016, Fall 2106, Spring 2017) Mechanics of Materials (Spring 2015) Statics (Fall 2014)
2012–2013	**Teaching Assistant**, Mechatronics Engineering Dept. University of Tehran Courses: Advanced Robotics (Spring 2012, Spring 2013) Mechatronics I (Spring 2012, Spring 2013) Mechatronics II (Spring 2012, Fall 2012)
2011–2013	**Instructor**, Mechatronics Engineering Dept. University of Tehran Courses: Mechatronics I,II Lab (Spring 2012, Fall 2012, Spring 2013)
2010–2011	**Instructor**, Mechanical Engineering Dept. University of Tehran Courses: Mechatronics I Lab (Fall 2010, Fall 2011)

Teaching Interests

- Dynamic Systems & Control
- Flight Mechanics & Control
- Intermediate Dynamics | Spacecraft Dynamics & Control
- Robotics | Mechatronics
- Fluid Mechanics | Thermodynamics
- Astrodynamics | Orbital Mechanics
- Data Analysis & System Identification
- Digital Control
- Advanced Multivariable Control
- Nonlinear Systems & Control
- Robust Control | Adaptive Control
- Optimal Control

Archival Peer-reviewed Journal Publications

12. H. J. Kim, **M. Kamaldar**, and D. S. Bernstein, "Initial undershoot in discrete-time input-output Hammerstein systems," *IEEE Open Journal of Control Systems*, 2025. DOI: 10.1016/j.ymssp.2024.111711

11. **M. Kamaldar**, N. Mohseni, S. A. U. Islam, and D. S. Bernstein, "A numerical and experimental investigation of predictive cost adaptive control for noise and vibration suppression," *Mechanical Systems and Signal Processing*, 2024. DOI: 10.1016/j.ymssp.2024.111711

10. **M. Kamaldar**, S. A. U. Islam, J. B. Hoagg, and D. S. Bernstein, "Analysis and mitigation of one-step delay in real-time implementation of state-feedback controllers," *International Journal of Control*, 2024. DOI: 10.1080/00207179.2024.2380030

9. **M. Kamaldar** and J. B. Hoagg, "Lyapunov-like functions for almost global convergence in discrete-time systems," *Systems & Control Letters*, 2024. DOI: 10.1016j.sysconle.2024.105807

8. **M. Kamaldar**, S. A. U. Islam, J. B. Hoagg, and D. S. Bernstein, "Demystifying enigmatic undershoot in setpoint command following," *IEEE Control Systems Magazine*, 2022. DOI: 10.1109/MCS.2021.3122270

7. **M. Kamaldar** and J. B. Hoagg, "Centralized and decentralized adaptive harmonic control for sinusoidal disturbance rejection," *Control Engineering Practice*, 2021. DOI: 10.1016/j.conengprac.2021.104814

6. **M. Kamaldar**, S. Sanjeevini, and D. S. Bernstein, "Revisiting minimal realizations," *IEEE Control Systems Magazine*, 2021. DOI: 10.1109/MCS.2020.3032802

5. **M. Kamaldar** and J. B. Hoagg, "Time-domain adaptive higher-harmonic control for rejection of sinusoidal disturbances," *ASME Journal of Dynamic Systems, Measurement, and Control*, 2020. DOI: 10.1115/1.4049016

4. **M. Kamaldar** and D. S. Bernstein, "Dynamic output-feedback control of a chain of discrete-time integrators with arbitrary zeros and asymmetric input saturation," *Automatica*, 2020. DOI: 10.1016/j.automatica.2020.109387

3. **M. Kamaldar**, S. A. U. Islam, S. Sanjeevini, J. B. Hoagg, and D. S. Bernstein, "Adaptive digital PID control of first-order-lag-plus-dead-time dynamics with sensor, actuator, and feedback nonlinearities," *Advanced Control for Applications*, 2019. DOI: 10.1002/adc2.20

2. **M. Kamaldar** and J. B. Hoagg, "Adaptive harmonic control for rejection of sinusoidal disturbances acting on an unknown system," *IEEE Transactions on Control Systems Technology*, 2018. DOI: 10.1109/TCST.2018.2873283

1. **M. Kamaldar** and J. B. Hoagg, "Adaptive harmonic steady-state control for rejection of sinusoidal disturbances acting on a completely unknown system," *International Journal of Adaptive Control and Signal Processing*, 2017. DOI: 10.1002/acs.2766

Archival Peer-reviewed Conference Publications

13. **M. Kamaldar** and D. S. Bernstein, "When can a full-state-feedback controller be implemented as an open-loop controller?" *American Control Conference*, Denver, CO, July 2025 (accepted).

12. **M. Kamaldar** and I. Kolmanovsky, "Sampled-data global stabilization with time-varying, arbitrary-tight, and one-sided control constraints: A variational-equations approach," *Modeling, Estimation, and Control Conference*, Chicago, IL, October 2024 . DOI: 10.1016/j.ifacol.2025.01.006

11. **M. Kamaldar** and D. S. Bernstein, "Adaptive output-feedback model predictive control of Hammerstein systems with unknown linear dynamics," *American Control Conference*, Toronto, ON, July 2024. DOI: 10.23919/ACC60939.2024.10644298

10. **M. Kamaldar**, A. Goel, S. A. U. Islam, and D. S. Bernstein, "On the lack of robustness of observers for systems with uncertain, unstable dynamics," *American Control Conference*, San Diego, CA, May 2023. DOI: 10.23919/ACC55779.2023.10156076

9. **M. Kamaldar** and J. B. Hoagg. "Results on Lyapunov-like functions for almost global convergence in discrete-time systems," *American Control Conference*, Atlanta, GA, June 2022. DOI: 10.23919/ACC53348.2022.9867478

8. **M. Kamaldar** and J. B. Hoagg. "Decentralized adaptive harmonic control for rejection of sinusoidal disturbances acting on an unknown system," *American Control Conference*, Philadelphia, PA, July 2019. DOI: 10.23919/ACC.2019.8814370

7. **M. Kamaldar** and J. B. Hoagg. "Time-domain adaptive harmonic control for sinusoidal disturbances rejection," *American Control Conference*, Milwaukee, WI, June 2018. DOI: 10.23919/ACC.2018.8431195

6. **M. Kamaldar** and J. B. Hoagg. "Time-Domain adaptive harmonic control for rejection of sinusoidal disturbances acting on an unknown discrete-time system," *American Control Conference*, Seattle, WA, May 2017. DOI: 10.23919/ACC.2017.7963841

5. **M. Kamaldar** and J. B. Hoagg. "Adaptive control for rejection of sinusoidal disturbances with unknown frequency acting on an unknown system," *American Control Conference*, Seattle, WA, May 2017. DOI: 10.23919/ACC.2017.7963842

4. **M. Kamaldar** and J. B. Hoagg. "Multivariable adaptive harmonic steady-state control for rejection of sinusoidal disturbances acting on an unknown system," *American Control Conference*, Boston, MA, July 2016. DOI: 10.1109/ACC.2016.7525150

3. **M. Kamaldar**, M. J. Mahjoob, and H. V. Alizadeh. "Robust speed control of a spherical robot using ARX uncertain modeling," *IEEE Robotic and Sensors Environments*, Montreal, QC, Canada, September 2011. DOI: 10.1109/ROSE.2011.6058538

2. **M. Kamaldar**, M. J. Mahjoob, M. H. Yazdi, H. V. Alizadeh and S. Ahmadizadeh. "A control synthesis for reducing lateral oscillations of a spherical robot," *IEEE International Conference on Mechatronics*, Istanbul, Turkey, April 2011. DOI:10.1109/ICMECH.2011.5971346

1. S. Ahmadizadeh, A. Montazeri, J. Poshtan, M. J. Mahjoob and **M. Kamaldar**. "Minimax-LQG control of a flexible plate using frequency-domain, subspace-identified models," *IEEE International Conference on Mechatronics*, Istanbul, Turkey, April 2011. DOI:10.1109/ICMECH.2011.5971293

Dissertation

1. **M. Kamaldar**, "Discrete-time adaptive control algorithms for rejection of sinusoidal disturbances," *Ph.D. Dissertation, Mechanical Engineering, University of Kentucky*, December 2018. DOI:10.13023/etd.2018.478

Technical Talks

19. "Data-driven feedback control of highly undermodeled systems," *Lawrence Technological University*, Southfield, MI, October 2024.

18. "Data-driven feedback control of highly undermodeled systems," *University of South Alabama*, Mobile, AL, October 2024.

17. "Data-driven feedback control of highly undermodeled systems," *RTX Technology and Research Center*, Hartford, CT, September 2024.

16. "Adaptive output-feedback model predictive control of Hammerstein systems with unknown linear dynamics," *Amer. Contr. Conf.*, Toronto, July 2024.

15. "Data-driven feedback control of highly undermodeled systems," *University of Alabama*, Tuscaloosa, AL, March 2024.

14. "On the lack of robustness of observers for systems with uncertain, unstable dynamics," *Amer. Contr. Conf.*, San Diego, CA, May 2023.

13. "Results on Lyapunov-like functions for almost global convergence in discrete-time systems," *Amer. Contr. Conf.*, Atlanta, GA, June 2022.

12. "Adaptive Control for Highly Uncertain Systems," *Yahoo! Research*, April 2022.

11. "Decentralized adaptive harmonic control for rejection of sinusoidal disturbances acting on an unknown system," *Amer. Contr. Conf.*, Philadelphia, PA, July 2019.

10. "Adaptive control for rejection of sinusoidal disturbances acting on an unknown system," *Ford Motor Company*, September 2018.

9. "Time-domain adaptive harmonic control for sinusoidal disturbances rejection," *Amer. Contr. Conf.*, Milwaukee, WI, June 2018.

8. "Adaptive harmonic control for rejection of sinusoidal disturbances: Theory and application to aerospace systems," 43$^{\text{rd}}$ *Dayton-Cincinnati Aerospace Sciences Symposium*, Dayton, OH, February 2018.

7. "Adaptive control for rejection of sinusoidal disturbances with unknown frequency acting on an unknown system," *Amer. Contr. Conf.*, Seattle, WA, May 2017.

6. "Time-domain adaptive harmonic control for rejection of sinusoidal disturbances acting on an unknown discrete-time system," *Amer. Contr. Conf.*, Seattle, WA, May 2017.

5. "Adaptive control for rejection of sinusoidal disturbances acting on an unknown system: Theory and application to aerospace systems," 42$^{\text{nd}}$ *Dayton-Cincinnati Aerospace Sciences Symposium*, Dayton, OH, March 2017.

4. "Multivariable adaptive harmonic steady-state control for rejection of sinusoidal disturbances acting on an unknown system," *Amer. Contr. Conf.*, Boston, MA, July 2016.

3. "Robust speed control of a spherical robot using ARX uncertain modeling," *IEEE Robotic and Sensors Environments*, Montreal, QC, Canada, September 2011.

2. "A control synthesis for reducing lateral oscillations of a spherical robot," *IEEE Int. Conf. Mechatro.*, Istanbul, Turkey, April 2011.

1. "Minimax-LQG control of a flexible plate using frequency-domain, subspace-identified models," *IEEE Int. Conf. Mechatro.*, Istanbul, Turkey, April 2011.

Technical Session Chair

- Chair, "Stability of Nonlinear Systems," 2022 American Control Conference

Journal and Conference Reviewer

- Automatica
- IEEE Transactions on Control Systems Technology
- IEEE Transactions on Automatic Control
- AIAA Journal of Guidance, Control, and Dynamics
- International Journal of Robust and Nonlinear Control
- Control Engineering Practice
- International Journal of Adaptive Control and Signal Processing
- Journal of the Franklin Institute
- Journal of Sound and Vibration
- Autonomous Robots
- IEEE Transactions on Systems, Man, and Cybernetics: Systems
- Journal of Dynamic Systems, Measurement, and Control
- Advanced Control for Applications
- ISA Transactions
- European Journal of Control
- AIAA Journal
- International Journal of Control
- IET Control Theory & Applications
- IEEE Control Systems Letters
- Applied Mathematics and Computation
- The American Control Conference
- The Conference on Decision and Control
- IEEE Conference on Control Technology and Applications
- IEEE International Conference on Mechatronics