Curriculum Vitae

Hassan Zargarzadeh, Ph.D.
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Education:

Ph.D.	Electrical Engineering	Missouri university of Science and Technology	2012
M.Sc.	Electrical Engineering	Iran University of Science and Technology	2009
B.Sc.	Electrical Engineering	Tehran Polytechnic	2000

Work Experience:

August 2021 – Present	Associate Professor Philip M. Drayer Department of Electrical Engineering Lamar University Beaumont, TX
August 2015 – August 2021	Assistant Professor Philip M. Drayer Department of Electrical Engineering Lamar University Beaumont, TX
August 2014 – July 2015	Assistant Professor Department of Polytechnic Studies Southeast Missouri State University (SEMO) Cape Girardeau, MO
August 2013 – July 2014	Faculty and Graduate Academic Advisor Department of Electrical and Computer Engineering Southern Illinois University (SIU) Carbondale, IL
August 2012 – May 2013	Faculty Department of Polytechnic Studies Southeast Missouri State University (SEMO) Cape Girardeau, MO
January 2010 – August 2012	Research Assistant Department of Electrical and Computer Engineering Missouri University of Science and Technology Rolla, MO

October 2006 – June 2009	Research Assistant Iran University of Science and Technology Tehran, Iran
2001 – 2006	Production Manager Panam Azma Inc. Manufacturer of Air Sterilization Systems for Medical Facilities Tehran, Iran
2000 – 2001	Automation Engineer Kaveh Group Co., Tehran/Saveh, Iran

HONORS, AWARDS, AND RECOGNITIONS:

- Received the Anthony George fellowship for excellence in research, Lamar University, 2017.
- Best presenter runner-up at sixth annual poster presentation of ISC-supported research, Rolla, MO, November 4, 2010.
- Excellent student (top 3%) among all students in M.Sc. program at Iran University of Science and Technology, Iran, 2008.
- Ranked 850th in Nationwide M.Sc. entrance exam in Electrical Engineering of Iranian Universities, 2006, out of nearly 12,000 participants.
- Ranked 115th in Nationwide B.Sc. entrance exam in Mathematics and Physics of Iranian Universities, 1995, out of nearly 1,000,000 participants.
- Top student in scientific competitions of the Khuzestan province, Iran, 1994.

RESEARCH AND TEACHING INTERESTS:

- Advanced Control Systems: Nonlinear, Adaptive, Optimal, and Robust control
- Robotics: Design, Control, Implementation, and Path Planning of Advanced Robotic Systems
- Artificial Intelligence: Deep Learning-Based Object Detection
- Power Electronics: Nonlinear Control of Advanced Switching Converters
- Aerospace and Unmanned Aerial Vehicle Navigation (UAV) Control Systems
- Fuel Optimization of Combustion Engines
- Extremum Seeking for Optimization of Nonlinear Systems

TEACHING EXPERIENCE:

August 2015 – Present	Lamar University, Beaumont, Texas ELEN4351, Control Engineering, Senior Level ELEN5312, Power Electronics, Senior Level and Graduate Level ELEN5314, Introduction to Robotics, Senior Level and Graduate Level ELEN2320, Fundamentals of Instrumentation and Control, Junior Level ELEN4317, PLC Programming, Senior Level and Graduate Level

Academic years of 2012&2014	Southeast Missouri State University, Cape Girardeau, Missouri
	ET160/162, Basic Electricity & Electronics ET164, AC Principles & Circuits ET245, Logic Circuits ET367, Motor Control & Drive Systems ET366, Microcontrollers (I developed this course) ET260, Electronic Circuits Design & Analysis I ET365, Power Systems
August 2015 – Present	Southern Illinois University, Carbondale, Illinois
	ECE356, Systems and Controls, Senior Level ECE593w, Advanced Topics in Software Engineering, Graduate Level ECE530, Engineering Data Acquisition, Graduate Level

PROFESSIONAL SOCIETY MEMBERSHIP AND ACTIVITIES:

- Member, IEEE, Control Systems (CSS) Society.
- Associate Editor, Complexity of Hindawi/Wiley, 2018-present.
- Session chair for the IEEE American Control Conference 2017.
- Reviewer for more than ten different prestigious Journals, 2010-Present.
- Reviewer for ACC and CDC conferences, 2010-Present.
- Committee member of numerous theses and dissertations.
- Chair, IEEE Beaumont TX section (2018-present).

DEPARTMENT AND UNIVERSITY ACTIVITIES:

- Department's graduate comprehensive exam coordinator (2020- present)
- Lamar's Electrical Engineering department representative in the Lamar Introduction to Engineering (LITE). (2018, 2017)
- Member of faculty search committee (2016)
- Lamar's Electrical Engineering department representative in Cardinal View event held every semester (2015 - Present).
- Technical advisor for the undergraduate Lamar Robotics team (2015 - present).
- Academic advisor for ECE undergraduate students (2015 - present).

AWARDED RESEARCH GRANTS AND CONTRACTS:

#	Proposal Title and Investigators	Agency	Budget
GR.15	Internal: Center for Advances in Water and Air Quality (CAWAQ): Autonomous Aquatic Robot for Invasive Species Evaluation (AARISE) Harley R. Myler (PI) and Hassan Zargarzadeh (Co-PI)	Lamar	$24,900
GR.14	Remote pavement distress surveying with a drone and multi-spectral cameras	Lamar, CICE	$2,500

	Investigators: Hassan Zargarzadeh (PI: EE Dept), Nick Brake (Co-PI: CE Dept)		
GR.13	Using Unmanned Aerial Systems (UAVs) for Intelligent Structural Damage Inspection Investigator: H. Zargarzadeh and J. Silva	Lamar, CICE	$956
GR.12	Drones Donation for the Robotics and Intelligent Control Lab Investigator: Hassan Zargarzadeh	Jack Gill Foundation	$4500
GR.11	LiDAR-Based Navigation and Mapping for Drones Investigator: H. Zargarzadeh and Mahdi Safa	Lamar, CICE	$2600
GR.10	Teaching Feedback Control Systems with a Palm-size Drone Investigator: H. Zargarzadeh	Lamar, CICE	$3500
GR.9	Real-Time Bunker Consumption Optimization against Uncertain Weather and Sea States Investigator: Hassan Zargarzadeh	Lamar, CAPM	$17000
GR.8	Developing an Intelligent Software for Detection and Classification of Weld Defects in Radiographic Images - Phase I Investigator: H. Zargarzadeh	Stanley Black & Decker: CRC-Evans	$66,303
GR.7	Real time Object tracking and following on a fully autonomous robot using Deep Neural Network Investigator: Hassan Zargarzadeh	Lamar, CICE	$4,500
GR.6	Center of Advances in Port Management (CAPM): Real-Time Fuel Consumption Optimization against Uncertain Weather and Sea States, $10,000, Funded. Investigators: Hassan Zargarzadeh (PI)	Lamar, CAPM	$10,000
GR.5	Path Planning for Multi-Team Robotic Agents: A Hunter and Gatherer Approach Investigators: Hassan Zargarzadeh (PI)	Lamar, REG	$15,000
GR.4	Fuel Consumption Optimization against Uncertain Weather and Sea States Investigators: Hassan Zargarzadeh (PI)	FuelTrax	$49,945
GR.3	Startup research credit to use the Google Cloud Platform (GCP) for AI training purposes. Investigator: Hassan Zargarzadeh	Google	$20,000
GR.2	Acquiring HEF budget to equip the EE's Robotics lab with the state of the art (Motion Analysis) system for Swarm Robotics Research Investigator: Hassan Zargarzadeh	Lamar	$52,000
GR.1	Developing an Intelligent Software for Detection and Classification of Weld Defects in Radiographic Images - Phase II Investigator: H. Zargarzadeh	Stanley Black & Decker: CRC-Evans	$97,949

M.SC. GRADUATE STUDENTS:

MS6. Nishant Gadhvi, License Plate Detection on Drones Using Deep Learning, Computer Vision - Data Scientist at Amgen, Spring 2019.

MS5. Shahriar Ahmad, Vision-based Autonomous Object Tracking for Hexapod Using an Actuated Camera, August 2018 (Doctorate Student at Lamar University).

MS4. Krishna Khadka, Comparative Analysis of MPPT Methods for PV System with DC-DC Multilevel Converter, December 2018 (Amber Kinetics Inc.).

MS3. Alimul Ahsan, Multi-objective Optimization of a Grid-connected Hybrid Power System: A Case Study on SETX, May 2018.

MS2. Chathura Seneviratne, May 2015 (C&D Robotic Automation)

MS1. Ammar Al Jodah, Experimental Verification and Comparison of Different Stabilizing Controllers for a Rotary Inverted Pendulum, December 2013 (Assistant Lecturer at University of Technology Baghdad, Iraq)

DOCTORATE GRADUATE STUDENTS:

DE7 Sadra Naddaf Shargh, Image Processing and Deep Learning Application in Robotics, Expected to Defend in Spring 2022.

DE6. Mohammad Islam, A Dynamic Terrorizing Approach for Workload Balancing and Resource Management in a Distributed Multiagent System, defended Summer 2020.

DE5. Shahriar Ahmad, Fuel Optimization of Large Maritime Diesel Engines, Expected to Defend in Spring 2022.

DE4. Mehdi Dadvar, Task Planning for Heterogeneous Multiagent Systems in Dynamic Environment, Defended Summer 2020.

DE2. Majid Taheri, Nonlinear Control for Path Tracking of Spherical Robots, Robotics Software Engineer at Pensa Systems, Defended Fall 2019.

DE1. Mohammad Mahdi Naddaf Shargh, Image Processing and Deep Learning Application in Robotics, Defended Spring 2020.

PUBLICATIONS

DISSERTATION:

D1. Zargarzadeh, Hassan. "Lyapunov-based optimal control of a class of nonlinear systems." (2012).

BOOK CHAPTER:

BC3. M-Mahdi Naddaf-Sh, Sadra Naddaf-Sh, Hassan Zargarzadeh, Sayyed M. Zahiri, Maxim Dalton, Gabriel Elpers, Amir R. Kashani,
9 - Defect detection and classification in welding using deep learning and digital radiography,
Editor(s): Hamid Karimi,
Fault Diagnosis and Prognosis Techniques for Complex Engineering Systems,
Academic Press, 2021, Pages 327-352, ISBN 9780128224731,
https://doi.org/10.1016/B978-0-12-822473-1.00007-0.

BC2. D. Nodland, H. Zargarzadeh, A. Gosh, and S. Jagannathan, “Neural Network-Based Optimal Control of an Unmanned Helicopter,” in Advanced Intelligent and Autonomous Aerospace Systems, AIAA, 2013.

BC1. H. Zargarzadeh, Q. Yang, S. Jagannathan, “Online Optimal Control of Nonaffine Nonlinear Discrete-Time Systems without Using Value and Policy Iterations,” in Reinforcement Learning and Approximate Dynamic Programming for Feedback Control, IEEE Press, 2012.

PEER-REVIEWED JOURNAL PUBLICATIONS:

J17. Pourgharibshahi, Hamed, Seyyedmahdi Jafarishiadeh, Hamid Mahmoudi, Hassan Zargarzadeh, and Reza Ahmadi. "Novel single-armed modular multilevel converter for reducing total converter capacitance." IET Power Electronics 14, no. 4 (2021): 760-774.
DOI: https://doi.org/10.1049/pel2.12061

J16. Dadvar, Mehdi, Saeed Moazami, Harley R. Myler, and Hassan Zargarzadeh. "Multiagent task allocation in complementary teams: a hunter-and-gatherer approach." Complexity 2020.
DOI: https://doi.org/10.1155/2020/1752571

J15. M. Islam, M. Dadvar, H. Zargarzadeh, “A Dynamic Territorializing Approach for Multiagent Task Allocation,” in Complexity 2020.
DOI: https://doi.org/10.1155/2020/8141726

J14. M Naddaf-Sh, SS Hosseini, J Zhang, NA Brake, H Zargarzadeh, “Real-Time Road Crack Mapping Using an Optimized Convolutional Neural Network,” Complexity, 2019.
DOI: https://doi.org/10.1155/2019/2470735

J13. S Moazami, H Zargarzadeh, S Palanki, “Kinematics of Spherical Robots Rolling over 3D Terrains,” Complexity, 2019.
DOI: https://doi.org/10.1155/2019/7543969

J12. S. Sajadian, R. Ahmadi and H. Zargarzadeh, "Extremum Seeking-Based Model Predictive MPPT for Grid-Tied Z-Source Inverter for Photovoltaic Systems," in IEEE Journal of Emerging and Selected Topics in Power Electronics, vol. 7, no. 1, pp. 216-227, March 2019.
DOI: 10.1109/JESTPE.2018.2867585.

J11. M-Mahdi Naddaf-Sh, Harley Myler, and Hassan Zargarzadeh, “Design and Implementation of an Assistive Real-Time Red Lionfish Detection System for AUV/ROVs,” Complexity, vol. 2018, Article ID 5298294, 10 pages, 2018.

J10. Majid Taheri Andani, Zahra Ramezani, Saeed Moazami, Jinde Cao, Mohammad Mehdi Arefi, and Hassan Zargarzadeh, “Observer-Based Sliding Mode Control for Path Tracking of a Spherical Robot,” Complexity, vol. 2018, Article ID 3129398, 15 pages, 2018.

J9. M. R. Barzegaran, H. Zargarzadeh and O. A. Mohammed, "Wireless Power Transfer for Electric Vehicle Using an Adaptive Robot," in IEEE Transactions on Magnetics, vol. 53, no. 6, pp. 1-4, June 2017.

J8. Z. Ramezani, M. M. Arefi, H. Zargarzadeh, M. R. Jahed-Motlagh, “Neuro-adaptive backstepping control of SISO non-affine systems with unknown gain sign”, ISA Transactions, Vol. 65, pp. 199-209, 2016.

J7. Z. Ramezani, M. M. Arefi, H. Zargarzadeh and M. R. Jahed-Motlagh, "Neuro observer-based control of pure feedback MIMO systems with unknown control direction," in IET Control Theory & Applications, vol. 11, no. 2, pp. 213-224, 2017.

J6. H. Zargarzadeh, T. Dierks and S. Jagannathan, "Optimal Control of Nonlinear Continuous-Time Systems in Strict-Feedback Form," in IEEE Transactions on Neural Networks and Learning Systems, vol. 26, no. 10, pp. 2535-2549, Oct. 2015.

J5. H. Zargarzadeh, T. Dierks, and S. Jagannathan, "Adaptive neural network-based optimal control of nonlinear continuous-time systems in strict-feedback form," International Journal of Adaptive Control and Signal Processing, vol. 28, no. 3-5, pp. 305-324, 2014.

J4. D. Nodland, A. Ghosh, H. Zargarzadeh, and S. Jagannathan, "Neuro-optimal control of an unmanned helicopter," The Journal of Defense Modeling and Simulation, vol. 11, no. 1, pp. 5-18, 2014.

J3. D. Nodland, H. Zargarzadeh and S. Jagannathan, "Neural Network-Based Optimal Adaptive Output Feedback Control of a Helicopter UAV," in IEEE Transactions on Neural Networks and Learning Systems, vol. 24, no. 7, pp. 1061-1073, July 2013.

J2. R. Ahmadi, H. Zargarzadeh and M. Ferdowsi, "Nonlinear Power Sharing Controller for a Double-Input H-Bridge-Based Buckboost–Buckboost Converter," in IEEE Transactions on Power Electronics, vol. 28, no. 5, pp. 2402-2414, May 2013.

J1. H. Zargarzadeh, S. Jagannathan, and J. Drallmeier, "Robust optimal control of uncertain nonaffine MIMO nonlinear discrete-time systems with application to HCCI engines," International Journal of Adaptive Control and Signal Processing, vol. 26, no. 7, pp. 592-613, 2012.

REFEREED CONFERENCE PUBLICATIONS:

C23. Naddaf-Sh, Sadra, M-Mahdi Naddaf-Sh, Amir R. Kashani, and Hassan Zargarzadeh. "An efficient and scalable deep learning approach for road damage detection." In 2020 IEEE International Conference on Big Data (Big Data), pp. 5602-5608. IEEE, 2020.

DOI: https://doi.org/10.1109/BigData50022.2020.9377751

C22. S. Ahmad, S. Moazami, H. Zargarzadeh, “Autonomous Color Based Object Tracking of a Hexapod with Efficient Intuitive Characteristics,” in 2019 IEEE International Symposium on Measurement and Control in Robotics (ISMCR)
DOI: 10.1109/ISMCR47492.2019.8955728

C21. S. Bastola, H. Zargarzadeh, “,” in 2019 IEEE International Symposium on Measurement and Control in Robotics (ISMCR).
DOI: 10.1109/ISMCR47492.2019.8955701

C20. S. Moazami, S. Palanki and H. Zargarzadeh, "Kinematics of Norma, a Spherical Robot, Rolling Over 3D Terrains," 2019 American Control Conference (ACC), Philadelphia, PA, USA, 2019, pp. 1330-1335.
DOI: 10.23919/ACC.2019.8815194.

C19. K. Khadka, H. Pourgharibshahi and H. Zargarzadeh, "Comparative Analysis of MPPT Methods for PV System with DC-DC Three-Level Converter," 2018 Clemson University Power Systems Conference (PSC), Charleston, SC, USA, 2018, pp. 1-6.
DOI: 10.1109/PSC.2018.8664013.

C18. M. T. Andani, H. Pourgharibshahi, Z. Ramezani and H. Zargarzadeh, "Controller design for voltage-source converter using LQG/LTR," 2018 IEEE Texas Power and Energy Conference (TPEC), College Station, TX, 2018, pp. 1-6.

C17. Z. Ramezani, M. M. Arefi, H. Zargarzadeh and M. R. Jahed-Motlagh, "Adaptive backstepping control for a class of uncertain MIMO systems with unknown control gain sign," 2017 American Control Conference (ACC), Seattle, WA, 2017, pp. 1785-1790.

C16. M. Khatibi, H. Zargarzadeh and M. Barzegaran, "Power system dynamic model reduction by means of an iterative SVD-Krylov model reduction method," 2016 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT), Minneapolis, MN, 2016, pp. 1-6.

C15. M. Khatibi, T. Amraee, H. Zargarzadeh and M. Barzegaran, "Comparative analysis of dynamic model reduction with application in power systems," 2016 Clemson University Power Systems Conference (PSC), Clemson, SC, 2016, pp. 1-6.

C14. R. Ahmadi and H. Zargarzadeh, "A new discrete-in-time extremum seeking based technique for maximum power point tracking of photovoltaic systems," 2015 IEEE Applied Power Electronics Conference and Exposition (APEC), Charlotte, NC, 2015, pp. 1751-1756.

C13. H. Zargarzadeh, S. Jagannathan and J. A. Drallmeier, "Extremum-seeking for nonlinear discrete-time systems with application to HCCI engines," 2014 American Control Conference, Portland, OR, 2014, pp. 861-866.

C12. A. Al-Jodah, H. Zargarzadeh and M. K. Abbas, "Experimental verification and comparison of different stabilizing controllers for a rotary inverted pendulum," 2013 IEEE International Conference on Control System, Computing and Engineering, Mindeb, 2013, pp. 417-423.

C11. H. Zargarzadeh, T. Dierks and S. Jagannathan, "Optimal adaptive control of nonlinear continuous-time systems in strict feedback form with unknown internal dynamics," 2012 IEEE 51st IEEE Conference on Decision and Control (CDC), Maui, HI, 2012, pp. 4127-4132.

C10. H. Zargarzadeh, T. Dierks and S. Jagannathan, "State and output feedback-based adaptive optimal control of nonlinear continuous-time systems in strict feedback form," 2012 American Control Conference (ACC), Montreal, QC, 2012, pp. 6412-6417.

C9. H. Zargarzadeh, D. Nodland, V. Thotla, S. Jagannathan, and S. Agarwal, "Neural-network-based navigation and control of unmanned aerial vehicles for detecting unintended emissions," In Unmanned Systems Technology XIV, vol. 8387, p. 83870H. International Society for Optics and Photonics, 2012.

C8. R. Ahmadi, H. Zargarzadeh and M. Ferdowsi, "Nonlinear power sharing controller for double-input H-bridge based converters," 2012 Twenty-Seventh Annual IEEE Applied Power Electronics Conference and Exposition (APEC), Orlando, FL, 2012, pp. 200-206.

C7. D. Nodland, H. Zargarzadeh and S. Jagannathan, "Neural network-based optimal control for trajectory tracking of a helicopter UAV," 2011 50th IEEE Conference on Decision and Control and European Control Conference, Orlando, FL, 2011, pp. 3876-3881.

C6. D. Nodland, A. Ghosh, H. Zargarzadeh, and S. Jagannathan, "Neuro-optimal control of helicopter UAVs," In Unmanned Systems Technology XIII, vol. 8045, p. 80450W. International Society for Optics and Photonics, 2011.

C5. H. Zargarzadeh, S. Jagannathan and J. Drallmeier, "Online near optimal control of unknown nonaffine systems with application to HCCI engines," 2011 IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning (ADPRL), Paris, 2011, pp. 258-263.

C4. H. Zargarzadeh and M. R. J. Motlagh, "Robust optimal controller design for a non-minimum phase boiler system with a saturable actuator," 2009 IEEE Control Applications, (CCA) & Intelligent Control, (ISIC), St. Petersburg, 2009, pp. 980-985.

C3. H. Zargarzadeh and M. R. J. Motlagh, "New control laws for angular velocity and line-of-sight stabilization of under-actuated rigid spacecraft," 2009 17th Mediterranean Conference on Control and Automation, Thessaloniki, 2009, pp. 594-599.

C2. H. Zargarzadeh, and MR Jahed Motlagh, "Anti-control of chaos in rigid body motion using an internal torque source," IFAC Proceedings Volumes 42, no. 7, 349-354, 2009.

C1. H. Zargarzadeh, M. R. Jahed Motlagh and M. M. Arefi, "Multivariable robust optimal PID controller design for a non-minimum phase boiler system using loop transfer recovery technique," 16th Mediterranean Conference on Control and Automation, Ajaccio, pp. 1520-1525, 2008.