

**Curriculum Vitae****Hassan Zargarzadeh, Ph.D.**

Philip M. Drayer Electrical Engineering Department  
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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	Amirkabir University of Technology	2000

**Work Experience:**

August 2015 – Present	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 850<sup>th</sup> in Nationwide M.Sc. entrance exam in Electrical Engineering of Iranian Universities, 2006, out of nearly 12,000 participants..
- Ranked 115<sup>th</sup> 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:**

- 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:**

- GR4. Real-Time Bunker Consumption Optimization against Uncertain Weather and Sea States  
 Center for Advances in Port Management (CAPM), 2017  
 Total Project Cost: \$31,900
- GR3. Using Autonomous Robots to Track Invasive Species  
 Office of Undergraduate Research, 2016  
 Total Project Cost: \$998
- GR2. Design and Manufacturing a Kinetic Sculpture to Foster Collaboration Between Art and  
 Engineering Students  
 Don M. and Maryann Lyle Foundation  
 Total Project Cost: \$25,000  
 My Share: 33%
- GR1. An Aquatic Robot for Lionfish Remediation,  
 Center for Advances in Water and Air Quality (CAWAQ), 2016

Total Project Cost: \$24,900  
My Share: 50%

**M.SC. GRADUATE STUDENTS:**

- MS5. Shahriar Ahmad, Vision-based Autonomous Object Tracking for Hexapod Using an Actuated Camera, August 2018.
- 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:**

- DE6. Mohammad Islam, TBD.
- DE5. Shahriar Ahmad, Fuel Optimization of Large Maritime Diesel Engines.
- DE4. Mehdi Dadvar, Game Theoretic Path Planning for Multi-Agent Robotic Systems.
- DE3. Saeed Moazami, Modeling, Control, and Implementation of Spherical Robots.
- DE2. Majid Taheri, Advanced Control of Spherical Robots.
- DE1. Mohammad Mahdi Naddaf Shargh, Vision-Based Intelligence with Applications to Robotics.

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**PUBLICATIONS**

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**DISSERTATION:**

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

**BOOK CHAPTER:**

- 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:**

- 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*.  
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:**

- 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.