

**HAMID ALLAMEHZADEH, Ph.D.**

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**EDUCATION:**

**PH.D. - ELECTRICAL ENGINEERING** (Spring 1996)

Dissertation: "Design and Stability Analysis of a Sliding Mode Fuzzy Controller."

University of Oklahoma, Norman, OK

**MS-ELECTRICAL ENGINEERING** (Spring 1991)

Thesis: "A Fast Solution to Inverse Kinematics Problem Using a Back Propagation Neural Network."

University of Oklahoma, Norman, OK

**BS-Electrical Engineering** (Spring 1985)

University of Oklahoma, Norman, OK

**GRADUATE**

**COURSEWORK:**

Topics in Control Theory, Advanced Control Theory, Adaptive Control, Control Theory, Signal Processing, Advanced Signal Processing, Digital Systems Design, Digital Design Lab, Digital System Interfaces, Data Communication, Communication Theory, Digital Communication Analysis, and Graph Theory.

**RESEARCH**

**INTERESTS:**

Fuzzy Logic Control, Sliding Mode Control, Artificial Intelligence, Adaptive Control, Signal Processing, Nonlinear Control, Renewable Energy, and Communication Systems

**PROFESSIONAL  
EXPERIENCE:**

**Aug 1998-present**

**Professor**

Department of Mathematical Sciences / Electronic Engineering

Eastern New Mexico University, Portales, New Mexico

*Teaching Electronic Communications, Analog Electronics, Circuit Theory, Linear Systems, and Control systems courses.*

**June 1997-July 1998**

*Research in Sliding Mode Control and Fuzzy Control*

University of Oklahoma, Norman

**Aug 1996-May 1997**

**Assistant Professor**

Department of Electrical Engineering

University of Wisconsin, Platteville, Wisconsin

*Taught Automatic Control Systems and Digital Control Systems courses and their corresponding Laboratories.*

*Researched in Sliding Mode Control and Fuzzy Control*

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**1994-1996**

University of Oklahoma, Norman, OK  
Research in Sliding Mode Control and Fuzzy Control

**Summer 1994**

University of Oklahoma, Norman, OK

**Research Assistant**

- ◆ Operated and Maintained an Artificial Heart at the University of Oklahoma Control Lab
- ◆ Research on a Fuzzy Logic Controller for the Artificial Heart.

**1989-1994**

University of Oklahoma, Norman, OK

**Teaching Assistant**

School of Electrical Engineering, University of Oklahoma  
I was a teaching assistant for the following courses: Control System Design, Linear Systems Design, Circuits and Systems, Electromagnetic Fields, Electronics, Digital Design Lab, and Digital System Design.

**COMPUTER SKILLS:**

**High Level Language**

FORTRAN and C

**Assembly Language**

8085 and 8086.

**Control System, Circuits, and Signal Processing Software**

MATLAB, PSpice, and Mathematica

**Word Processing Software**

Microsoft Word, Ami Pro, and WordPerfect.

**Operating System**

DOS and Microsoft Window.

**Hardware**

Motorola M68HC11 Micro Controller, Allen Bradley SLC 500 and TMS320C10 DSP Processor.

**PUBLICATIONS:**

[1] "An Overview of Wind Energy Technology and Control,"

Revised last summer and submitted to International Journal of Enhanced Research in Science Technology & Engineering (IJERSTE) in July.

[2] "An Overview of Wind Energy Technology and Control," Submitted to IEEE Conference on Technologies for Sustainability, SUSTEC 2014, Portland, Oregon.

- [3] "Control of Magnetic Levitation Systems Using SMFC-Hybrid
- [4] Control," Artificial Neural Networks in Engineering Conference (ANNIE 2010), St. Louis, MO, Nov. 9-12.
- [5] "Conventional Sliding Mode Control of Magnetic Levitation Systems," IASTED International Conference on Control and
- [6] Applications (CA 2009), Quebec City, Canada, May 26-28, 2008.
- [7] "Comparative Study of VSS Controls with Sliding Mode via the Ball & Beam Systems," IASTED International Conference on Control and Applications (CA 2008), Quebec City, Canada, May 26-28, 2008.
- [8] "An Enhanced Optimal Sliding Mode Fuzzy Control," 8<sup>th</sup> IASTED Conference on Controls and Applications, May 25, 2006, Montreal, Canada.
- [9] "Sliding Mode Fuzzy Control with Optimal Rule Table," IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2006), July 21, 2006, Vancouver, Canada.
- [10] "Optimal Fuzzy Sliding Mode Control with Adaptive Boundary Layer," 4<sup>th</sup> WSEAS International Conference on Instrumentation, Measurement, Control, Circuits and Systems, April 2004.
- [11] "Smooth Response Sliding Mode Fuzzy Control with Intrinsic boundary Layer," IEEE International Conference on Fuzzy Systems (FUZZ-IEEE2003), May 2003.
- [12] "Robust Fuzzy Control with Sliding Mode Property and Inherent Boundary Layer," American Control Conference (ACC-03), June 2003.
- [9] "Chattering-Free Sliding Mode Fuzzy Control with Continuous Inherent Boundary Layer," IEEE International Conference on Fuzzy Systems, May 2002.
- [10] "Control Of Highly Coupled Structures Using a Multivariable Sliding Mode Fuzzy Controller," Artificial Neural Network In Engineering Conference (ANNIE), Nov. 2001.
- [11] "A Novel Approach to Design a Stable and Robust Fuzzy Controller for a Class of Nonlinear System," Proceeding of the SPIE's 7<sup>th</sup> Annual International Symposium on Smart Structure and Materials, March 2000.
- [12] "Design of a Stable and Robust Fuzzy Controller for a Class of Nonlinear System," FUZZ-IEEE '96 International Conference on Fuzzy Systems, September 1996.
- [13] "Design and Stability Analysis of a Multivariable Sliding Mode Fuzzy Controller," Mid-America Symposium on Emerging Computer Technologies' 96, October 1996.

- [14] “Design and Stability Analysis of a Sliding Mode Fuzzy Controller,” Ph.D. Dissertation, University of Oklahoma, 1996.
- [15] “Estimation of Direction of Arrival and Frequency Sweeping Rate of Linear Chirp Signals by Discretized Version of the Continuous Wavelet Transform,” IASTED International Conference: Signal and Image Processing, November 1995.
- [16] “Direction of Arrival and Frequency Sweeping Rate Estimation of Linear Chirp Signal by Continuous Wavelet Transform,” IEEE Signal Processing Letters, 1995.
- [17] “Design and Stability Analysis of a Robust Fuzzy Control,” Artificial Neural Network in Engineering (ANNIE) Conference, November 1995.
- [18] “A Novel Approach to Inverse Kinematics Problem Using Neural Network,” Oklahoma Symposium on Artificial Intelligence, May 1992.
- [19] “A Fast Solution to Inverse Kinematics Problem Using a Back-Propagation Neural Network,” Pittsburgh 22 Annual Conference, May 1991.
- [20] “A Fast Solution to Inverse Kinematics Problem Using a
- [21] Back-Propagation Neural Network,” Master Thesis, University of Oklahoma, 1991.

### **GRANT HISTORY:**

Received fund from STEM-Office, spring 2015 to conduct faculty-directed research project in, “Design, Development, and Performance Evaluation of an Automatic Solar Tracker System Using Analog Electronic Controller.”

Received fund from STEM-Office, spring 2015 to conduct faculty-directed research project in, “Design, Development, and Performance Evaluation of an Automatic Solar Tracker System Using a Microcontroller.”

Received fund from STEM-Office, fall 2013, for supporting two students to conduct a faculty-directed research project on, “Analysis and Design of PID Controllers and its Applications to Magnetic Levitation.”

Received fund from ENMU-STEM office for summer 2013 to conduct a directed research project in the summer, developing nonlinear and linear models for magnetically levitated system with various weight magnetic balls using laboratory collected data and MATLAB software

Received a grant from WAESO for spring 2012 (\$8256) to continue conducting the faculty-directed research project on Laboratory Confirmation of Fourier Series, “Laboratory Confirmation of Fourier Series Using Analog Electric Hardware and MATLAB software.”

Received a grant from WAESO for fall 2011 (\$5756) to conduct a faculty-directed research project on the design of two-stage magnetic levitation systems, “Analysis, Design, and Implementation of two-stage Magnetic Levitation Train.”

Received a grant from WAESO for spring 2010 (\$2756) to continue conducting faculty-directed research project on the position control of a magnetically levitated ball through PID controllers, “Position Control of a Magnetically Levitated Ball Using PID Control and Various Hall-Effect Sensors.”

Received a grant from WAESO for fall 2009 (\$2756) to continue conducting faculty-directed research project on the position control of a magnetically levitated ball through PID controllers, “Position Control of a Magnetically Levitated Ball Using PID Control and Optical & Hall-Effect Sensors.”

Received a grant from WAESO for spring 2009 (\$2756) to conduct a faculty-directed research project on the position control of a magnetically levitated ball through PID controllers, “Position Control of a Magnetically Levitated Ball Using PID Control and Optical & Hall-Effect Sensors.” This project is a continuation of the last semester project.

Received a grant from WAESO for fall 2008 (\$3756) to conduct a faculty-directed research project on wind turbine controllers for maximizing energy capture, “Control of Wind Turbines for maximizing Energy Capture.”

Received a grant from WAESO for fall 2008 (\$2756) to conduct a faculty-directed research project on the position control of a magnetically levitated ball through PID controllers, "Position Control of a Magnetically Levitated Ball Using PID Control and Optical & Hall-Effect Sensors." This project is a continuation of the last semester project.

Received a grant from WAESO for spring 2008 (\$2756) to conduct the faculty-directed research project on linear control of the ball & beam system, "Linear Control of the Ball & Beam System."

Received a grant from WAESO for spring 2008 (\$2756) to conduct the faculty-directed research project on Magnetic Levitation systems, "Position Control of a Magnetically Levitated Ball Using PID Controllers."

Received a grant from WAESO for Fall 2007 (\$2756) to conduct a faculty-directed research project on laboratory proof of Fourier series using analog filters "Laboratory Proof of Fourier Series Using Analog Electronic Filters and Op-Amps Circuitry."

Received a grant from WAESO for spring 2006 (\$2756) to conduct a faculty-directed research project on solar cells maximum power tracking, "Maximum Power Tracking of Photovoltaic Solar Cells Through Linear Controllers."

Received a grant from WAESO for Fall 2005 (\$2718) to conduct a faculty-directed research project on Analog Filters and Fourier Series, "Design and Implementation of Active Analog Filters and Their Applications to Fourier Series Analysis."

Received a grant from WAESO for spring 2005 (\$2700) to conduct a faculty-directed research project on Computer hard Drive, "Design of Linear Controllers for Controlling the Head Assembly of a Hard Drive."

Received a grant from WAESO for spring 2004 to conduct a faculty-directed research project on Magnetic Levitation, "Magnetic Levitation of a Ball via Linear Feedback Control," (\$2700).

Received a grant from WAESO for spring 2004 (\$2700) to conduct a faculty-directed research project on Fourier series, "Analysis of

Non-Sinusoidal Periodic Signals Using Fourier Series and the Concept of Gibbs Phenomenon.”

Received a grant from WAESO for summer 2003 (\$3731) to conduct the faculty-directed research project on generation and transmission of signals in telephone systems, “Generation, Transmission, and Detection of Various Frequency Signals in Telephone Systems.”

Received a grant from WAESO for spring 2003 (\$3756) to conduct the faculty-directed research project on the Design of Multi-input Multi-output Linear Controllers, “Design of Multi-Input Multi-Output Linear Controllers Using Modern Control Theory.”

Received an Internal Research Grant (\$1240), “Balancing a Rotational Inverted Pendulum Using Classical and Modern Control Approach,” to continue my research in modern control theory.

Received an Internal Research Grant, “Design of a Fuzzy Controller for a Class of Nonlinear System Using Describing Function Methodology,” (\$3300), spring 2000.

Received an Instructional Development Grant (\$2000), “Design and Performance Evaluation of Linear Controllers in Balancing an Inverted Pendulum,” to purchase an inverted pendulum device for implementing designed linear controllers and evaluating their performance in the control systems laboratory (EET 450).

Received a Faculty-Directed research grant from WAESO to direct students’ research on “Design and Performance Evaluation of

Linear Controllers in Balancing an Inverted Pendulum,” Summer 2002 (\$4756). The research was conducted in fall 2002.

Received a Faculty-Directed research grant from WAESO to direct students’ research on “Design and Performance Evaluation of Linear Controllers,” spring 2002 (\$3750).

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Received an Instructional Development Grant, "MATLAB for Engineers and Scientists," to purchase the Symbolic Math Toolbox and upgrade the existing MATLAB software, spring 2001, (\$2500).

Received a Faculty-Directed research grant from WAESO to direct students' research on, "Analysis of Composition and Decomposition of Periodic Signals Using Fourier Series," summer 2001, (\$2400)

Received a Faculty-Directed research grant from WAESO to direct students' research on, "Fourier Analysis of Variable Frequency Signals," fall 2001, (\$2400).

Initiated a professional cooperation between ENMU and Kar-Services Company by designing the Sure Lock Circuit for their trucks. The project has offered our students a professional training environment and good financial support since summer of 2001.

**PROFESSIONAL**

**MEMBERSHIPS:**

Member of Institute of Electrical and Electronic Engineering Society (IEEE).

Member of the IEEE Control System Society

Member of the IEEE Industrial Electronic Society

Member of the IEEE Circuits and System Society

Member of the IEEE Power & Energy Society

Member of the IEEE Robotic and Automation Society

**PERSONAL DATA:** U.S. citizen

**SPORTS:** Tennis, soccer, and jogging



## REFERENCES:

- ◆ Professor John Cheung, Electrical Engineering Department, University of Oklahoma, (405) 325-4324, Email: [jcheung@ou.edu](mailto:jcheung@ou.edu)
- ◆ Professor Kevin Grasse, Mathematics Department, University of Oklahoma, (405) 325-6711, Email: [kgrasse@ou.edu](mailto:kgrasse@ou.edu)
- ◆ Professor Regina Aragon, Mathematical Science Department, Eastern New Mexico University, (575) 562-2328, Email: [regina.aragon@enmu.edu](mailto:regina.aragon@enmu.edu)
- ◆ Dr. Tom Brown, Mathematical Sciences Department (Chair) Eastern New Mexico University, (575) 562-2330, Email: [tom.brown@enmu.edu](mailto:tom.brown@enmu.edu)
- ◆ Professor Mary Ayala, Dean of College of Liberal Arts and Sciences, Eastern New Mexico University, (575) 562-2421, Email: [mary.ayala@enmu.edu](mailto:mary.ayala@enmu.edu)