



# SAEED JAFARZADEH (SUMMARY)

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## Research

- More than 30 journal and conference papers that have been published or are under review at leading IEEE venues such as IEEE Trans. on Power Systems, IEEE Trans. On Sustainable Energy, IEEE Transactions on Industrial Electronics, and IEEE Trans. on Fuzzy Systems.
- Active collaboration in research and grant writing. Associate Editor of Asian Journal of Control and International Journal of Artificial Intelligence.

## Research Interests

- ✓ Renewable energy systems
- ✓ Deregulated Energy Markets
- ✓ Power Electronics
- ✓ Fuzzy Systems
- ✓ Electric Drives
- ✓ Control Systems

## Funding

Awarded	Pending
<ul style="list-style-type: none"> <li>“Quantitative Forecasting for Grid-Connected Renewable Power Generation: Fuzzy Logic Approach,” <b>funded by Department of Defense, \$440,342</b>, (2015-18). <b>PI</b></li> <li>“Course Redesign with Technology: Promising Practices Program,” funded by the California State University Office of the Chancellor, \$28,720 – 2015. <b>PI</b></li> <li>“Active Transportation Surveys, Analysis and Recommendations,” funded by Kern Council of Governments, \$20,000/year – starting 2014. <b>PI</b></li> <li>“Course Redesign with Technology: Promising Practices Program,” funded by the California State University Office of the Chancellor, \$24,775 – 2014. <b>PI</b></li> <li>“STEM Retention and Graduation: An Integrated Approach,” funded by NSF DUE: IUSE, \$ 1,083,336, 2014-2016. <b>Senior Personnel</b></li> <li>“High School Summer Research Program in Renewable Energy Systems: Maximum Wind and Solar Energy Extraction,” funded by Chevron, \$16,000/year – 2013-15. <b>PI</b></li> </ul>	<ul style="list-style-type: none"> <li>“A Broad Framework for Analysis of Power Systems with High Penetration of Renewables,” submitted to NSF EAGER: EPCN, \$220,936 (Jun. 2015). <b>PI</b></li> <li>“Acquisition of Multi-Domain Advanced Real-Time Simulator for Support of Interdisciplinary STEM Research,” submitted to DoD DURIP, \$355,000, (Sep. 2015). <b>PI</b></li> <li>“Impact of a Comprehensive Eng. Emphasis on Enhancing Student Participation and Training in Electrical Power Syst.,” submitted to NSF IUSE, \$300,000 (Nov. 2015). <b>PI</b></li> <li>“Smart Micro-Grid Design Using Renewable Energy for Sustainable Agriculture,” submitted to USDA AFRI: Exploratory Research, \$100,000 (Jun. 2015). <b>PI</b></li> <li>“ATE Small Grant: Collaborative: Enhancing Technician and Engineering Training within the Southern San Joaquin Valley,” submitted to NSF ATE, \$200,000 (Oct. 2015). <b>PI</b></li> </ul>

## Professional Experience

- ✓ Assistant Professor at California State University Bakersfield, since Aug. 2012.
- ✓ Ph.D. at University of Nevada Reno, Aug. 2012.
- ✓ Management level experience at KalaMehr Trading Co. and Bita Wire Industries.
- ✓ Extensive background in young entrepreneurship. Started a company in 2000 and scaled it to \$1.5M in revenue by 2005.

## Collaborators

Dr. Sami Fadali, Dr. Cansin Yaman Evrenosoglu, Dr. Cristian Lascu, Dr. Hanif Livani, Dr. Andrzej Trzynadlowski, Dr. Hani Mehrpouyan, Dr. Yiannis Ampatzidis, Dr. Yantao Shen, Dr. Evelyn Young, and Dr. Rob Negrini.

# SAEED JAFARZADEH

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## *Education*

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**University of Nevada Reno, Reno, NV** 2009-2012

Ph.D. in Electrical Engineering

Advisor: *Dr. M. Sami Fadali*

Dissertation Title: “Stability Analysis and Control Design of TSK Systems with Applications in Power Systems”

- Published seven papers all in highly respected IEEE journals.
- Published eight papers all in highly respected IEEE conferences.
- Awarded the Prominent Teaching Assistant by Graduate Student Association, spring 2011.
- Instructor for two semesters for Electric Circuits (fully responsible).
- Co-instructing a graduate course on Nonlinear Control
- Teaching assistant for three semesters in Control Systems Laboratory.

**Iran University of Science & Technology, Tehran, Iran** 2005-2008

M.S. in Electrical Engineering

Advisor: *Dr. M. R. Jahed Motlagh*

Thesis Title: “Traffic Control in Automated Highway Systems Using BELBIC Controller”

- Published two journal papers.
- Published five conference papers.
- Instructor for two semesters for Electric Circuits (fully responsible).
- Teaching assistant for three semesters in Fuzzy Systems.
- Ranked 1<sup>st</sup> Among Graduate Students of Control Engineering, Electrical Engineering Department, fall 2005.
- Recognized for research and academic excellence.

**University of Tehran, Tehran, Iran** 2000-2005

B.S. in Electrical engineering

Advisor: *Dr. J. Biglarbeigian*

Graduation Project: “Vector Control of Linear Induction Electrical Motor”

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## *Academic and Industrial Appointments*

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**California State University Bakersfield** Aug. 2012-present

Computer & Electrical Engineering & Computer Science

*Assistant Professor/Director of Power Systems Laboratory*

- Three outstanding annual reviews by the departmental committee, the dean, and the school RTP committee.
- Applied for grants at variety of agencies including NSF, USDA, DOD, DOE, CALTRANS, and CSU.
- Teaching a variety of undergraduate courses.
- Running a summer program for two consecutive years in partnership with Chevron with the goal of encouraging the participation of women and minorities in the field of engineering.
- Leading the Electric Power Systems Laboratory.

- Initiating an Engineering Club for undergraduate research in engineering sponsored by local industry.
- Supervising a number of undergraduate research projects.
- Assisting with obtaining ABET accreditation for the Electrical Engineering program.
- An active member in California Energy Research Center.

**University of Nevada Reno, Reno, NV**

Feb. 2009-Jul. 2012

Electrical and Biomedical Engineering

*Research/Teaching Assistant/Instructor*

- Carried out research in the fields of Power Systems, Renewabl Energy Systems, Electric Drives, Fuzzy Control, and Biomedical Engineering.
- Developing an advanced experimental setup for Induction Motor observer design and control.
- Assisted in preparing NSF proposals.

**KalaMehr Trading Co.**

Sep. 2005-Jan. 2008

Sales Department

*Sales Manager*

- Boosted the total sales revenue from \$11M in 2005 to \$24M in 2008.
- Key role in establishing relationship with strong partners in Middle East and Europe.
- Successful introduction and establishment of five brands in the local market.
- Company level management awards.
- Left the company to pursue education in the US.

**Bitu Wire Industries**

Nov. 2000-Mar. 2005

*CEO*

- Started the company at a young age.
- Successfully reached \$1.5M revenue in 2005.
- Established customer body of more than 1000 retailers in the wire industries.
- Employed ~35 employees at 2005.
- Sold the company to focus on my education at Masters level.

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***Grant Proposals***

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**Awarded**

- **“Quantitative Forecasting for Grid-Connected Renewable Power Generation: Fuzzy Logic Approach,” funded by Department of Defense, \$440,342, 2015-18. PI**
- “Course Redesign with Technology: Promising Practices Program,” funded by the California State University Office of the Chancellor, \$28,720 – 2015. **PI**
- “Active Transportation Surveys, Analysis and Recommendations,” funded by Kern Council of Governments, \$20,000/year – starting 2014. **PI**
- “Course Redesign with Technology: Promising Practices Program,” funded by the California State University Office of the Chancellor, \$24,775 – 2014. **PI**
- “STEM Retention and Graduation: An Integrated Approach,” funded by NSF DUE: IUSE, \$ 1,083,336, 2014-2016. **SP**
- “Sustainable Electricity Grid: A Course Design,” funded by the California State University Office of the Chancellor, \$12,000 - 2013. **PI**
- “High School Summer Research Program in Renewable Energy Systems: Maximum Wind and Solar Energy Extraction,” funded by Chevron, \$16,000/year – 2013-15. **PI**

### Pending

- “A Broad Framework for Analysis of Power Systems with High Penetration of Renewables,” NSF EAGER: EPCN, \$220,936 (Jun. 2015). **PI**
- “Acquisition of Multi-Domain Advanced Real-Time Simulator for Support of Interdisciplinary STEM Research,” DoD DURIP, \$355,000, (Sep. 2015). **PI**
- “Impact of a Comprehensive Eng. Emphasis on Enhancing Student Participation and Training in Electrical Power Syst.,” NSF IUSE, \$300,000 (Nov. 2015). **PI**
- “Smart Micro-Grid Design Using Renewable Energy for Sustainable Agriculture,” USDA AFRI: Exploratory Research, \$100,000 (Jun. 2015). **PI**
- “ATE Small Grant: Collaborative: Enhancing Technician and Engineering Training within the Southern San Joaquin Valley,” NSF ATE, \$200,000 (Oct. 2015). **PI**

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### Research Interests

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- Renewable energy systems  
Main focus areas are solar and wind integration in power systems. Several fuzzy modeling approaches are utilized to model photovoltaic generation in solar farms.
- Electric Drives  
Main focus is on observer and controller design for induction motor drives with experimental implementation. Unscented Kalman Filters are utilized for observer design. The major and unique contribution is the ability to control the closed loop system in regions of operation that are known to be unstable. Controllers designed include Emotional Learning Control and Feedback Linearization Control.
- Smart grid  
Main focus is on the use of fuzzy modeling to model the policies and regulations in smart grid.
- Fuzzy Systems  
Main focus is on type-2 TSK fuzzy systems. Ground-breaking theoretical studies on stability analysis, control design, and fuzzy modeling resulted in methodologies which are used for a variety of applications.
- Deregulated Electricity Markets  
Stability of electricity markets modeled by innovative fuzzy modeling is performed. Uncertainties in electricity markets considered and modeled using type-2 TSK systems.
- Control Systems  
Control systems and systems theory is extensively used to develop many theoretical results that support the contributions in different applications.
- Power System State Forecast  
Use of statistical approaches to address challenges in power systems state forecast for systems with high intermittent wind generation.

- **S. Jafarzadeh**, M. S. Fadali, Hanif Livani, “*TSK Modeling and Stability Analysis of Energy Markets*,” IEEE Trans. on Power Systems, (in print. Available on IEEEXplore).
- H. Livani, **S. Jafarzadeh**, C. Y. Evrenosoglu, and S. Fadali, “*A Unified Approach for Power System Predictive Operations using Viterbi Algorithm*,” IEEE Trans. on Sustainable Energy Vol. 5, Issue 3, pp. 757-766, 2014.
- M. S. Fadali, **S. Jafarzadeh** “*Stability Analysis of Positive Interval Type-2 TSK Systems with Application to Energy Markets*,” IEEE Trans. on Fuzzy Systems, Vol. 22, Issue 4, pp. 1031-1038, 2014.
- M. S. Fadali, **S. Jafarzadeh**, “*TSK Observers for Discrete Type-1 and Type-2 Fuzzy Systems*,” IEEE Trans. on Fuzzy Systems, Vol. 22, Issue 2, pp. 451-458, 2014.
- **S. Jafarzadeh**, M. S. Fadali, “*On the Stability and Control of Continuous TSK Fuzzy Systems*,” IEEE Trans. on Cybernetics, Vol. 43, Issue 3, pp. 1073-1087, June 2013.
- **S. Jafarzadeh**, M. S. Fadali, C. Y. Evrenosoglu, “*Solar Power Prediction Using Interval Type-2 TSK Modeling*,” IEEE Trans. on Sustainable Energy, Vol. 4, Issue 2, pp. 333-339, April 2013.
- **S. Jafarzadeh**, C. Lascu, M. S. Fadali, “*Square Root Unscented Kalman Filters for State Estimation of Induction Motor Drives*,” IEEE Trans. on Industry Applications, Vol. 49, Issue 1, pp. 92-99, January 2013.
- **S. Jafarzadeh**, C. Lascu, M. S. Fadali, “*State Estimation of Induction Motor Drives Using the Unscented Kalman Filter*,” IEEE Trans. on Industrial Electronics, Vol. 59, Issue 11, pp. 4207-4216, Nov. 2012.
- A. Sonbol, M. S. Fadali, **S. Jafarzadeh**, “*TSK Fuzzy Function Approximators: Design and Accuracy Analysis*,” IEEE Trans. on Systems, Man & Cybernetics–B, Vol. 42, Issue 3, pp. 702-712, June 2012.
- **S. Jafarzadeh**, M. S. Fadali, A. Sonbol, “*Stability Analysis and Control of Discrete Type-1 and Type-2 TSK Fuzzy Systems: Part I Stability Analysis*,” IEEE Trans. on Fuzzy Systems, Vol. 19, Issue 6, pp.989-1000, Dec. 2011.
- **S. Jafarzadeh**, M. S. Fadali, A. Sonbol, “*Stability Analysis and Control of Discrete Type-1 and Type-2 TSK Fuzzy Systems: Part II Control Design*,” IEEE Trans. on Fuzzy Systems, Vol. 19, Issue 6, pp.1001-1013, Dec. 2011.
- **S. Jafarzadeh**, R. Mirheidari, M. R. Jahed Motlagh, M. Barkhordari, “*Designing PID and BELBIC Controllers in Path Tracking Problem*,” Int. Journal of Computers, Communications & Control, Vol. 3, pp. 343-348, 2008.
- **S. Jafarzadeh**, R. Mirheidari, M. R. Jahed Motlagh, M. Barkhordari, “*Intelligent Autopilot Control Design for a 2-DOF Helicopter Model*,” Int. Journal of Computers, Communications & Control, Vol. 3, pp. 337-342, 2008.

- **S. Jafarzadeh**, M. S. Fadali, “*Terminal Voltage Regulation of Generators Using TSK Controllers*,” IEEE Trans. on Energy Conversion.
- **S. Jafarzadeh**, C. Lascu, M. S. Fadali, “*Direct Torque Control with Feedback Linearization for Induction Motor Drives*,” IEEE Trans. on Power Electronics.

- **S. Jafarzadeh**, M. S. Fadali, “*Instability Conditions for Type-1 and Type-2 TSK Fuzzy Systems*,” IEEE Trans. on Cybernetics.

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**Peer-reviewed Conference Publications**

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- C. Lascu, **S. Jafarzadeh**, M. S. Fadali, F. Blaabjerg, “*Direct Torque Control with Feedback Linearization for Induction Motor Drives*,” IEEE Energy Conversion Congress & Exposition, 2015.
- H. Livani, **S. Jafarzadeh**, S. Fadali, “*DC Power Flow using Fuzzy Linear Equations*,” IEEE Power and Energy Society General Meeting 2015.
- **S. Jafarzadeh**, S. Fadali, “*Fuzzified Viterbi Algorithm for Hour-Ahead Wind Power Prediction*,” American Control Conf., 2014.
- H. Livani, **S. Jafarzadeh**, S. Fadali, C. Y. Evrenosoglu, “*Power System State Forecasting using Fuzzy-Viterbi Algorithm*,” IEEE Power and Energy Society General Meeting 2014.
- **S. Jafarzadeh**, C. Lascu, M. S. Fadali, “*An Emotional Learning Intelligent Direct Torque and Flux Controller Design for Induction Motor Drives*,” IEEE Energy Conversion Congress & Exposition, 2012.
- **S. Jafarzadeh**, S. Fadali, M. Etezadi, “*Fuzzy Type-1 and Type-2 TSK Modeling with Application to Solar Power Prediction*,” Power and Energy Society General Meeting 2012.
- **S. Jafarzadeh**, M. S. Fadali, “*Stability and Control of Continuous TSK Fuzzy Systems*,” American Control Conference 2012.
- M. S. Fadali, **S. Jafarzadeh**, “*Observer Design for Discrete Type-1 and Type-2 TSK Fuzzy Systems*,” American Control Conference 2012.
- H. Livani, **S. Jafarzadeh**, C. Y. Evrenosoglu, S. Fadali, “*State Forecasting of Power System with Intermittent Renewable Sources Using Viterbi Algorithm*,” Proceedings of IEEE Power and Energy Society (PES) General Meeting, Detroit, July 2011.
- M. S. Fadali, **S. Jafarzadeh**, “*Fuzzy TSK Positive Systems: Stability and Control*,” American Control Conf., 2011.
- **S. Jafarzadeh**, C. Lascu, M. S. Fadali, “*Square Root Unscented Kalman Filters for State Estimation of Induction Motor Drives*,” IEEE Energy Conversion Congress & Exposition, 2011.
- M. S. Fadali, **S. Jafarzadeh**, A. Nafeh, “*Fuzzy TSK Approximation Using Type-2 Fuzzy Logic Systems and Its Application to Modeling a Photovoltaic Array*,” American Control Conf. pp. 6454-6459, 2010.
- **S. Jafarzadeh**, M. S. Fadali, M. Etezadi-Amoli, A. Nafeh, “*Type-1 and Type-2 Fuzzy TSK Modeling of Solar Radiation for PV Power Generation*,” North American Power Symposium, 2010.
- **S. Jafarzadeh**, M. S. Fadali, C. Y. Evrenosoglu, H. Livani, “*Hour-ahead Wind Power Prediction for Power Systems Using Hidden Markov Models and Viterbi Algorithm*,” IEEE Power and Energy Society General Meeting, 2010.
- **S. Jafarzadeh**, M. S. Fadali, “*Stability Analysis of Discrete Type-2 TSK Fuzzy Systems with Interval Uncertainty*,” IEEE International Conference on Fuzzy Systems, 2010.
- M. S. Fadali, Y. Shen, **S. Jafarzadeh**, Y. Jingang, “*Electro-tactile Preference Identification Using Fuzzy Logic*,” IEEE Annual International Conference on Engineering in Medicine and Biology, 2009.

- **S. Jafarzadeh**, R. Mirheidari, M.R. Jahed Motlagh, M. Barkhordary, “A New Lyapunov Based Algorithm for Tuning BELBIC Controllers for Linear Systems,” 16th Mediterranean Conference on Control and Automation, France, 2008.
- **S. Jafarzadeh**, R. Mirheidari, M.R. Jahed Motlagh, M. Barkhordary, “Designing PID and BELBIC Controllers in Path Tracking and Collision Problem in Automated Highway Systems,” 10<sup>th</sup> International Conference on Control, Automation, Robotics and Vision, Vietnam, December 2008.

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### ***Peer-reviewed Conference Publications with Student Co-authors***

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- A. Ramirez, M. Cook, **S. Jafarzadeh**, “Low-Cost Self-Governing Energy Management System for Micro-Grids,” North American Power Symposium, 2015.
- J. D. Franco, **S. Jafarzadeh**, “Temperature Regulating Independent Smart Blinds Desing, Hardware Implementation and Simulation,” North American Power Symposium, 2015.
- S. Sadiqbatcha, **S. Jafarzadeh**, “An Affordable Brain-Computer Interface for Electrical Energy Applications,” North American Power Symposium, 2015.
- E. DeLeon, **S. Jafarzadeh**, K. Galloway, Y. Ampatzidis, “Independent HVAC Vent Control System,” Southern Cal. Conf. for Undergraduate Research, 2014.
- M. Cook, **S. Jafarzadeh**, Y. Ampatzidis, “Home Energy Saving: A Monitoring Approach,” Southern Cal. Conf. for Undergraduate Research, 2014.
- J. Ward, A. Ramirez, Y. Ampatzidis, **S. Jafarzadeh**, “Autonomous Data Collection System Using Intelligent Unmanned Aerial Vehicles,” Southern Cal. Conf. for Undergraduate Research, 2014.
- J. Ward, A. Ramirez, Y. Ampatzidis, **S. Jafarzadeh**, “UAV-based Wireless Sensor Network in Orchards,” Southern Cal. Conf. for Undergraduate Research, 2014.

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### ***Teaching Experience***

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#### ***California State University Bakersfield***

ECE 464: Power Electronics (F’15)

- *The course is an introduction to switched-mode power converters. It provides a basic knowledge of circuitry for the control and conversion of electrical power with high efficiency. These converters can change and regulate the voltage, current, or power; dc-dc converters, ac-dc rectifiers, dc-ac inverters, and ac-ac cycloconverters are in common use. Applications include electronic power supplies, aerospace and vehicular hybrid power systems, and renewable energy systems. About ten students were enrolled in the course.*

ECE 490: Senior Project (S’14)

- *After consultation with the faculty supervisor and investigation of relevant literature, the student(s) shall prepare a substantial project with significance in the designated area. The timeline, teamwork responsibilities, milestones, and presentation(s) are scheduled. In the completion phase of the project, the student(s) presented a project report to the entire class, explaining the nature of the work, the finished product, and its relationship to the field of study.*

ECE 336: Electrical Machinery (S'14, 15)

- *This course is an introduction to the analysis and design of electromechanical energy conversion systems, magnetic circuit theory, general transformer and machinery theory, DC and AC motors and generators. The course also had a lab component. LabVolt educational equipment is used for instruction of the labs. About ten students were enrolled in the course.*

ECE 337: Fundamentals of Power Systems (W'14, W'15)

- *This course is an introductory subject in the field of electric power systems. Electric power systems have become increasingly important as a way of transmitting and transforming energy in industrial, military and transportation uses. The course covers basic elements of power system, three-phase circuit analysis, transformers, transmission line configuration, the per unit system and power flow. The course also had a lab component. LabVolt educational equipment is used for instruction of the labs. About 15 students per quarter were enrolled in the course.*

MATH 231: Calculus II for Engineering (W'14)

- *The course is team-taught in collaboration with Dr. Yangsuk Ko from the math department at CSUB. My role was covering engineering applications.*

ECE 307: Analog Circuits (W'14)

- *The course is team-taught in collaboration with Dr. Wei Li and Dr. Hani Mehrpouyan.*

ECE 304: Signals and Systems (F'13, F'14, F'15)

- *The course covered continuous signals and systems. The course starts from signals, and then continues to systems theory and convolution integral. The course also covers Laplace transform, Fourier series and Fourier transform. The course also had a lab component. About 30 students per quarter were enrolled in the course.*

MATH 231: Calculus I for Engineering (F'13)

- *The course is team-taught in collaboration with Dr. Charles Lam from the math department at CSUB. My role was covering engineering applications.*

CENG 433: Mechatronics (S'13)

- *The course covered fundamentals of mechatronics. Since the topic is a highly multidisciplinary engineering field, several topics discussed in the course. These topics include analog and digital circuits, microcontroller design, data acquisition systems, sensors, and actuators. The course also had a lab component.*

CMPS 221: Programming Fundamentals (W'13)

- *The course covered basic C++ programming. The course also had a lab component. 32 students were enrolled in the course.*

CENG 306: Complex Analysis (W'13)

- *The course covered complex analysis mainly with applications to electrical engineering. The course also had a lab component. Five students were enrolled in the course.*

CENG 304: Linear Systems (F'12)

- *The course covered continuous signals and systems. The course starts from signals, and then continues to systems theory and convolution integral. The course also covers Laplace transform, Fourier series and Fourier transform. The course also had a lab component. Nine students were enrolled in the course.*



## University of Nevada, Reno

EE 220: Circuits I (F'11, S'12)

- *This course is offered as standard course on circuits, required for all engineering and computer science majors. I was completely responsible for the course. Used one graduate student as teaching assistant. The course enrolled ~180 student each semester.*

EE 220L: Circuits I Lab. (F'11, S'12)

- *As part of my duties for the course on Circuits, I was fully responsible for the lab. Three teaching assistants helped in running the labs. 100 students in five sections per semester were enrolled. As part of the lab, students was responsible for soldering and testing a multi-meter kit that they learned a lot from and got to keep the meter.*

EE 776: Nonlinear Control (S'12)

- *Co-taught this graduate course with Dr. Sami Fadali. The well-known textbook by Dr. H. Khalil is used in the course. Standard topics such as limit cycles, Lyapunov stability, feedback linearization, backstepping, and sliding mode control are covered. The enrollment was 12 graduate students.*

EE 370L: Syst. and Control Lab. (S'10, S'11)

- *Teaching assistant for the control systems lab. Design and implementation of 15 lab sessions on a variety of topics including sensors, engineering modeling, operational amplifiers, and control design. LabView and MATLAB are extensively utilized. Experimental setups used include DC motor control, double tank system, magnetic levitation, temperature transducer, and strain gauge transducer. The course enrollment was ~30 students per semester.*

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## Collaborators

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**Dr. Sami Fadali:** University of Nevada Reno. Senior Member IEEE. Collaboration on fuzzy systems with applications to power systems.

**Dr. Cansin Yaman Evrenosoglu:** Virginia Tech. Senior Member IEEE. Collaboration on renewable energy systems and power systems state forecast research.

**Dr. Cristian Lascu:** University Politehnica of Timisoara, Romania. Collaboration on electric drives research.

**Dr. Hanif Livani:** University of Nevada Reno. Collaboration on research in the field of power systems operations with renewable energy resources.

**Dr. Andrzej Trzynadlowski:** University of Nevada Reno. Fellow of IEEE. Collaboration on a book chapter on electric drives.

**Dr. Hani Mehrpouyan:** Boise State University. Collaboration on grant proposals and smart grid research.

**Dr. Alberto Cruz:** California State University Bakersfield. Collaboration on grant proposals and research on thermographic analysis of photovoltaics.

**Dr. Yiannis Ampatzidis:** California State University Bakersfield. Collaboration on grant proposals and renewable energy research for farming applications.

**Dr. Yantao Shen:** University of Nevada Reno. Collaboration on biomedical engineering research.

**Dr. Rob Negrini:** California State University Bakersfield. Director of California Energy Research Center. Collaboration on grant proposals in areas related to energy and outreach activities.

**Dean Liz Rozell:** Bakersfield College. Collaboration on grant proposals and articulation plans between CSUB and Bakersfield College.

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### *Current Students*

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**Alex Ramirez:** Alex is a junior student in the electrical engineering program at CSUB. Alex works on developing an energy management system for micro-grid applications.

**Juan Franco:** Juan is a senior student working on probabilistic power flow problem. His research goal is to implement a variety on Unscented Transforms and investigate their performance.

**Jane Berk:** Jane is a senior student majored in electrical engineering. Her research is focused on power system state forecast.

**Sheriff Sadiqbacha:** Sheriff is a junior student in computer engineering program at CSUB. Sheriff's research is currently focused on using fuzzy logic for sparse matrices with application to power system state estimation.

**Kevin O'Brien:** Kevin is a senior student in computer science program at CSUB. He is currently involved with research on constrained optimization using fuzzy logic with application to economic dispatch problem.

**Kody Bryan:** Kody is a junior student in computer engineering program at CSUB. Kody's research is currently focused on using thermographic analysis for fault detection in solar panels.

**Mohammed Cook:** Mohammed is a sophomore undergraduate student working on home energy monitoring systems under my supervision. Mohammed's work is focused on prototyping and experimental development.

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### *Former Students*

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**Sulaiman Alkadashee:** Alumni student from CSUB. He worked on UAVs at the engineering club. Sulaiman successfully completed a project and presented at local research competition and won awards in the competition under my supervision. He also secured the second place in a state- level research competition. Sulaiman is currently an engineer with Innovative Engineering Systems.

**Ezekiel DeLeon:** He is a senior student working on home energy systems. He is designing a smart ventilation system for home and office applications. Last year he received a \$2000 stipend for conducting this project.

**Martin Gomez:** Martin has been involved in undergraduate research for some time. He is working on higher degrees of freedom for solar tracking. He received an award for conducting his research under my supervision in 2014-15 academic year.

**Joshua Ward:** Sophomore student in the computer engineering program at CSUB. He has been working under my supervision for more than a year. His extensive experimental work on utilizing UAVs for data acquisition systems received some local news coverage. He presented and won awards in both local and state-level research competition.

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### ***Summer Programs***

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**REVS-UP:** The School of Natural Sciences, Mathematics, and Engineering at California State University, Bakersfield offers a program in science and mathematics funded by Chevron Corp. The program involves local high school students in science, engineering and math research projects.

- **Summer 2013:** In collaboration with Dr. Wei Li, we had 10 talented high school students in three groups. Two student assistants from CSUB were also helping us with running the program. One group worked on maximum power point tracking in solar and wind generation systems. Another group worked on chemical sensors mounted on a robot. Finally, the last group worked on motion recognition using Kinect interfacing with LabView.
- **Summer 2014:** In collaboration with Dr. Yiannis Ampatzidis, 11 high school students worked in a research program. Three student assistants from CSUB were also helping us with running the program. The projects included a solar operated remote controlled boat (students designed and built the boat from scratch), solar tracking in marine applications, and data collection with UAVs.
- **Summer 2015:** Ten students are enrolled in two programs. Each program will support high school and college students under REVS-UP and MSEIP-2 programs at CSUB. These outreach programs will be on smart-grid technologies (tutored by Alex Ramirez) and brain-computer interface for power industry applications (tutored by Sheriff Sadiqbacha).

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### ***Synergetic Activities***

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- Founder and director of IS-GREEN (Investigators of Smart-Grid and Renewable Energy for Electric Networks) research center
- Director of Power Systems Laboratory at CSUB
- Member of ABET Accreditation Committee at CEE/CS CSUB
- Associate Editor
  - Asian Journal of Control
  - International Journal of Artificial Intelligence
- Reviewer
  - IEEE Transactions on Power Electronics

- IEEE Transactions on Industrial Electronics
- IEEE Transactions on Fuzzy Systems
- IEEE Transaction on Neural Networks and Learning Systems
- IEEE Control Systems Magazine
- Journal of Circuits, Systems & Signal Processing
- Advances in Engineering Education
- Artificial Intelligence for Engineering Design, Analysis and Manufacturing
- Membership
  - Institute of Electrical & Electronics Engineers (IEEE)
  - IEEE Industrial Electronics Society

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### *Invited Talks*

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#### **A Broad Framework for Power Networks with High Levels of Renewable Generation**

California State University Los Angeles                      *February 2015*                      *Host: Dr. F. Danehsgaran*

#### **Sustainable Energy Resources**

Wright State University    *January 2014*                      *Host: Dr. Kefu Xue*

#### **Fuzzy Logic with Applications to Sustainable Energy Resources**

University of Washington Bothell                                      *March 2013*                      *Host: Dr. Arnie Berger*

#### **Application of Fuzzy Logic in Power Systems with Renewable Energy**

University of New Haven    *March 2012*                      *Host: Dr. Ali Golbazi*

#### **On the Stability and Control in Power Systems**

California State University Bakersfield                                      *March 2012*                      *Host: Dr. Marc Thomas*

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### *Honors & Awards*

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- ✓ Awarded the Prominent Teaching Assistant by Graduate Student Association for teaching Systems and Control Lab., Spring 2011.
- ✓ Awarded UNR Graduate Student Travel Grant 2012 (to attend PES General Meeting in San Diego, CA).
- ✓ Awarded UNR Graduate Student Travel Grant 2011 (to attend American Control Conference in San Francisco, CA).
- ✓ Special Talent Award, Iran University of Science & Technology.
- ✓ Ranked 334<sup>th</sup> Among More Than 420, 000 Participants in the National Undergraduate University Entrance Exam, 2000.
- ✓ Ranked 105<sup>th</sup> Among Over 7,000 Participants in the Nationwide University Entrance Exam for Electrical Engineering Graduate Studies, 2005.
- ✓ Ranked 1<sup>st</sup> Among Graduate Students of Control Engineering, Electrical Engineering Department, GPA 18.43/20, Fall 2005.

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***Outreach Activities at CSUB***

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- Research Experience Vitalizing Science - University Program (REVS-UP)
- Member of Energy Center Initiative
- High School Engineering Representative
- CSUB Science Bowl
- Chevron Social Investment Initiative: Scaling Fab Labs
- Member of the Steering Committee for Engineering Industrial Advisory Board

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***References***

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