

Masoud Davari

Curriculum Vitae

Last Updated Date: Jan. 01, 2018

INFORMATION

Position: Assistant Professor in Power Systems and Power Electronics
Address: 1100 I.T. Drive, BLDG 255, Room 1116,
 Department of Electrical and Computer Engineering,
 Allen E. Paulson College of Engineering and Computing,
 Georgia Southern University,
 Statesboro, GA 30458, USA
Membership: IEEE Member, Since Jan. 2008
 Golden Key International Honour Society, Since Aug. 2013
Tel: +1 (912) 478-1312
Emails: mdavari@georgiasouthern.edu and davari@ualberta.ca
URL: <http://ceit.georgiasouthern.edu/electrical-engineering/faculty/facultystaff-directory/>

HIGHLIGHTS OF RESEARCH AND TEACHING INTERESTS

- **Analysis, Modeling, Digital Real-Time Simulation Methods, Operation, Advanced Protection Schemes, Primary, Secondary, and Tertiary Controls, Distributed Controls, Networked Controls, and Cybersecurity of Modernized DC Grids as Well as Smart, Hybrid AC/DC Power Networks**
- **Operation, Protection, Control, and Automation of Smart Microgrids Considering the High Penetration of Power Electronic Devices and Battery Energy Storage Systems**
- **Real Time Simulation and Power/Controller Hardware-In-the-Loop (PHIL/CHIL) Simulation of Power Electronic Devices and Power Systems**
- **Application of Power Electronic Converters in HVDC, Hybrid, Multi-Terminal AC/DC Power Systems, Super Grids, and Smart Grids**
- **Integration of Renewable Energy Resources into Hybrid Multi-Terminal AC/DC Power Systems**
- **Stability and Robust Performance of Hybrid Multi-Terminal AC/DC Power Systems**
- **Controller Synthesis and Design of Power Electronic Converters Employed in Power Systems**
- **Application and Control of Power Electronic Converters in Electric Drive Control**

EDUCATIONS

- Philosophy of Doctorate (Ph.D.) in Electrical Engineering (with Honor)** Jan. 2012 – Jan. 2016
 Majored in Energy Systems,
*Department of Electrical and Computer Engineering,
 University of Alberta, Edmonton, Canada*
 GPA (6 lecture courses): **4.0140/4.0000**
Thesis Title:
 Dynamics, Robust Control, and Power Management of Voltage-Source Converters in Hybrid Multi-Terminal AC/DC Grids
- Master of Science (M.Sc.) in Electrical Engineering (with Highest Distinction)** Sep. 2007 – Jan. 2010
 Majored in Power Engineering,
*Electrical Engineering Department,
 Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran*
 GPA: **19.05/20.00 (U.S. Equivalent 3.9063/4.0000)**
Thesis Title:
 Design and Implementation of Sigma-Delta Modulation Based Inverter for Distributed Generation Applications,
- Bachelor of Science (B.Sc.) in Electrical Engineering (with Highest Distinction)** Sep. 2003 – Sep. 2007
 Majored in Power Engineering,
*Department of Electrical and Computer Engineering,
 Isfahan University of Technology, Isfahan, Iran*
 GPA: **17.75/20.00**, GPA (last two years): **18.05/20**
Thesis Title:
 Design and Implementation of a Three Phase Inverter Based on Intelligent-IGBT (Intelligent Power Module; IPM) for Laboratory Applications,
- National Diploma in Mathematics and Physics (with Highest Distinction)** Sep. 1999 – Sep. 2003
School of Imam-Mohammad-Bagher, Isfahan, Iran
 GPA: 19.75/20.00

EMPLOYMENTS

- **Georgia Southern University,**
*Assistant Professor in Power Systems and Power Electronics,
 1100 I.T. Drive, BLDG 255, Room 1116,
 Department of Electrical and Computer Engineering
 Allen E. Paulson College of Engineering and Information Technology
 Georgia Southern University,
 Statesboro, GA 30458, USA* Jul. 2017 – Present
- **Quanta-Technology Company, an Independent Consulting Arm of Quanta Services,**
*Senior Consultant and R&D Specialist in Energy and Electric Power Systems (Real-Time Simulation, Control, Automation, and Protection)
 2900 John Street, Markham, Ontario, Canada* Apr. 2016 – July 2017
- **Quanta-Technology Company, an Independent Consulting Arm of Quanta Services,**
*Research R&D Intern in Energy and Electric Power Systems (Real-Time Simulation, Control, Automation, and Protection)
 2900 John Street, Markham, Ontario, Canada* Apr. 2015 – Apr. 2016
- **University of Alberta,**
*Graduate Research Assistant and Graduate Teaching Assistant in Energy Systems,
 Electrical & Computer Engineering Department, University of Alberta
 Edmonton, Alberta, Canada, T6G 2V4* Jan. 2012 – Jan 2016
- **Iran Grid Secure Operation Research Centre (IGSORC), a Spin-Off Company from and an Affiliated Institute to Amirkabir University of Technology (Tehran Polytechnic),**
*R&D Specialist in Energy and Electric Power Systems
 Tehran, Iran* Jan. 2010 – Dec. 2011
- **Amirkabir University of Technology (Tehran Polytechnic),**
*Graduate Research Assistant and Graduate Teaching Assistant in Power Electronics and Power Systems,
 Electrical Engineering Department, Tehran, Iran* Sep. 2007 – Jan. 2010
- **Isfahan University of Technology,**
*Teaching Assistant in Electrical Engineering,
 Department of Electrical and Computer Engineering, Isfahan, Iran* Sep. 2007 – Sep. 2005

PROFESSIONAL SERVICES

- **Active member of the newly established IEEE working group on Hardware-In-the-Loop (HIL) simulation,** IEEE WG P2004, *Recommended Practice for Hardware-in-the-Loop (HIL) Simulation Based Testing of Electric Power Apparatus and Controls*, IEEE Standards Association Jun. 2017 – Present
- **Chair of the Literature Review Subgroup,** *DC@Home Standards*, IEEE Standards Association Apr. 2014 – Oct. 2015
- **Invited Reviewer of Numerous Sections of IEEE Transactions,** including, but not limited to, *IEEE Transactions on Power Systems, Power Electronics, Smart Grid, Energy Conversion, and Industry Applications, etc.* 2003 – Present
- **Invited Reviewer of Numerous IET Journals, Energies Journals, and IEEE International Conferences,** including, but not limited to, *IESES18, IECON14, ICEMS09, ISIE09, PSCE09, ICIT09, PECon08, etc.* 2015 – Present
- **Invited Member of Technical Program Committees,** including, but not limited to, *2018 IEEE PES Transmission and Distribution Conference and Exposition Latin America (PES T&D LA), 2016/2017 IEEE International Autumn Meeting on Power, Electronics and Computing (ROPEC 2016/2017), ROPEC 2015/2016, PES T&D LA 2016 Conf., IEEE ISGT-LA 2015 Smart Grids, etc.* 2015 – Present

AWARDS AND ACHIEVEMENTS

- **Best Paper Award for a Collaborative Research on Microgrids Protection Schemes, Entitled, Microgrid Protection: An Overview of Protection Strategies in North American Microgrid Projects**
2017 IEEE-PES General Meeting, Chicago, IL, USA Jul. 2017
- **Granted National Interest Waiver (NIW) by the U.S. Citizenship and Immigration Services (USCIS) for Highly Cited and Top-Notch Research in the Field of Application of Power Electronic Converters in Hybrid AC/DC Modernized Power Systems, Protection, and Control** Apr. 2016
- **Alberta Innovates Doctoral Graduate Student Scholarship (AITF): 63,000.00 (CAD)**
Alberta Innovates Future Technologies, Edmonton, AB, Canada Jan. 2014 – Jan. 2016
Accepted
Partially

- **Ontario Graduate Scholarship (OGS): 22,902.00 (CAD)** Sep. 2011 –
Department of Electrical and Computer Engineering, University of Toronto, Toronto, ON, Canada Sep. 2013
Declined
- **Graduate Scholarship: 61,908.00 (USD) and 235,000.00 (USD)** Sep. 2011 –
Department of Electrical and Computer Engineering, Purdue University, West Lafayette, IN, USA; Rensselaer Polytechnic Institute, Troy, NY, USA Sep. 2013
Declined
- **Ranked 2st and Honored Member of Exceptional University Talents in Graduate Program** 2009
Electrical Engineering Department, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
- **Member of Foundation of Iranian Elites** 2008
Tehran, Iran
- **Ranked 1st among 8 winners of M.S. scholarship of Electrical Engineering Department** 2007
Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
- **Ranked 1st among 5 winners of B.S. scholarship of Electrical Engineering Department** 2007
Department of Electrical and Computer Engineering, Isfahan University of Technology, Isfahan Iran
- **Ranked 1st and Honored Member of Exceptional University Talents in Undergraduate Program** 2007
Department of Electrical and Computer Engineering, Isfahan University of Technology, Isfahan Iran
- **Honored as Top-Rank Student in High School Program** 2003
School of Imam-Mohammad-Bagher, Isfahan, Iran
- **Admitted in MATHEMATICS OLYMPIAD for High School Students and Candidate for Second Level of Olympiad** 2001

PATENTS

- **Flexible Distributed Generation Interfacing Inverter with Sliding Mode Controller,** 2010
Registered under No. 65010 in Iran, June 6, 2010

JOURNAL PAPERS

Accepted To Be Published, In Press, Published Journals

- **Masoud Davari** and Yasser Abdel-rady I. Mohamed, "*Robust Droop and DC-Bus Voltage Control for Effective Stabilization and Power Sharing in VSC Multiterminal DC Grids,*" IEEE Transactions on Power Electronics, vol. PP, no. 99, pp. 1 – 36, fully accepted, in press, DOI. 10.1109/TPEL.2017.2715039. 2018
- **Masoud Davari** and Yasser Abdel-rady I. Mohamed, "*Robust DC-Link Voltage Control of a Full-Scale PMSG Wind Turbine for Effective Integration in DC Grids,*" IEEE Transactions on Power Electronics, vol. 32, no. 5, pp. 4021 – 4035, May 2017, DOI. 10.1109/TPEL.2016.2586119. 2017
- **Masoud Davari** and Yasser Abdel-rady I. Mohamed, "*Robust Vector Control of a Very Weak Grid-Connected Voltage-Source Converter Considering the Phase-Locked Loop Dynamics,*" IEEE Transactions on Power Electronics, vol. 32, no. 2, pp. 977 – 994, February 2017, DOI. 10.1109/TPEL.2016.2546341. 2017
- **Masoud Davari** and Yasser Abdel-rady I. Mohamed, "*Dynamics and Robust Control of a Grid-Connected VSC in Multiterminal DC Grids Considering the Instantaneous Power of DC- and AC-side Filters and DC Grid Uncertainty,*" IEEE Transactions on Power Electronics, vol. 31, no. 3, pp. 1942 – 1958, March 2016, DOI. 10.1109/TPEL.2015.2439645. 2016
- **Masoud Davari** and Yasser Abdel-rady I. Mohamed, "*Variable-Structure-Based Nonlinear Control for the Master VSC in DC-Energy-Pool Multiterminal Grids,*" IEEE Transactions on Power Electronics, vol. 29, no. 11, pp. 6196 – 6213, November 2014, DOI. 10.1109/TPEL.2014.2300111. 2014
- **Masoud Davari** and Yasser Abdel-rady I. Mohamed, "*Robust Multi-Objective Control of VSC-Based DC-Voltage Power Port in Hybrid AC/DC Multi-Terminal Microgrids,*" IEEE Transactions on Smart Grid, vol. 4, no. 3, pp. 1597 – 1612, September 2013, DOI. 10.1109/TSG.2013.2249541. 2013

- **Masoud Davari**, A.R. Pourshoghi, M.R. Hajiahmadi, G.B. Gharehpetian, S.H. Fathi, "New Hybrid Controller Based on Sliding Mode Modulation for Inverter-Based DG with Existing Fast Load Changes," published in the Journal of International Review of Electrical Engineering (IREE), ISSN: 1827-6660, Vol. 5, N. 3, June 2010, pp. 1078 – 1086. 2010
- H. Afshari, M. Nazari, **Masoud Davari**, G.B. Gharehpetian, "Dynamic Voltage Restorer with Sliding Mode Control at Medium Voltage Level," published in the Journal of International Review of Electrical Engineering (IREE), ISSN: 1827-6660, Vol. 5, N. 2, March – April 2010, pp. 409 – 415. 2010

CONFERENCE PAPERS

- **M. Davari**, "Dynamics of an Industrial Power Amplifier for Evaluating PHIL Testing Accuracy: an Experimental Approach via Linear System Identification Methods," accepted for presenting at IEEE International Conference on Industrial Electronics for Sustainable Energy Systems (IESES2018), January 31 – February 02, 2018. 2018
- J. Shiles, E. Wong, S. Rao, C. Sanden, M. A. Zamani, **M. Davari**, and F. Katiraei, "Microgrid Protection: An Overview of Protection Strategies in North American Microgrid Projects," **Best Paper** of IEEE-PES General Meeting 2017, July 16 – 20, 2017. 2017
- **M. Davari** and F. Katiraei, "Investigation and Correction of Phase Shift Delays in Power Hardware in Loop Real-Time Digital Simulation Testing of Power Electronic Converters," in Proceedings of 2015 Grid of the Future Symposium; CIGRE US National Committee, October 11 – 13, 2015. 2015
- **M. Davari** and Y. A.-R. I. Mohamed, "Modeling, Analysis, and Robust Control of the Master VSC in Multi-Terminal Hybrid AC/DC Grids with LCL Filter," accepted to be presented at the 2014 IEEE Electrical Power and Energy Conference (EPEC), October, 2014, DOI. 10.1109/EPEC.2014.35. 2014
- I. Salabeigi, J. Milimonfared, G. B. Gharehpetian, M. Daryabak, **M. Davari**, "Improvement of Dynamic Response of SDM-Based PFC Converter Using Digital Controller," in Proceedings of Computational Technologies in Electrical and Electronics Engineering (SIBIRCON), IEEE, 11 – 15 July, 2010 pp. 688 – 691, DOI. 10.1109/SIBIRCON.2010.5555151. 2010
- M. Gholami, G. B. Gharehpetian, **M. Davari**, "One Day Ahead Prediction of Wind Speed Based on Power and Exponential," in Proceedings of Power Engineering and Optimization 4th International Conference (PEOCO), 23 – 24 June, 2010, pp. 449-452, DOI. 10.1109/PEOCO.2010.5559177. 2010
- **M. Davari**, Omid Alizadeh Mousavi, Iman Salabeigi, "Analysis and Comparison of the Lightning Overvoltage in the AC Connected and VSC Based HVDC Connected Wind Farms," in Proceedings of (TENCON 2009), Singapore, 23 – 26 November, 2009, DOI. 10.1109/TENCON.2009.5396188. 2009
- **M. Davari**, A. Kashefi Kaviani, I. Salabeigi, G.B. Gharehpetian, S.H. Fathi, "Optimal Tuning of Multifunction Current Controller for Sigma Delta Modulation Inverter-Based Distributed Generation Using PSO Method", in Proceedings of (TENCON 2009), Singapore, 23 – 26 November, 2009, DOI. 10.1109/TENCON.2009.5396187. 2009
- **M. Davari**, A.R. Pourshoghi, I. Salabeigi, G.B. Gharehpetian, S.H. Fathi, "A New Nonlinear Controller Design Using Average State Space Model of the Inverter-Based Distributed Generation to Mitigate Power Quality Problems," in Proceedings of the International Conference on Electric Machines and Systems (ICEMS2009), Tower Hall Funaboria, Tokyo, Japan, 15 – 18 November, 2009, DOI. 10.1109/ICEMS.2009.5382847. 2009
- A. Rahimi Nezhad, G. Mokhtari, **M. Davari**, A. Roghani Araghi, S. H. Hosseinian, G.B. Gharehpetian, "A New High Accuracy Method for Calculation of LMP as a Random Variable," in Proceedings of International Conference on Electric Power and Energy Conversion Systems (EPECS 2009), American University of Sharjah, UAE, 10 – 12 November, 2009, INSPEC Accession No. 11139669. 2009
- **M. Davari**, I. Salabeigi, G.B. Gharehpetian, S.H. Fathi, J. Milimonfared, "Multifunction Current Controller for Inverter-Based Distributed Generation using Combined PI-Sliding Mode Controller via Sigma-Delta Modulation," in Proceedings of IEEE International Symposium on Industrial Electronics (ISIE'09), SEOUL OLYMPIC PARKTEL, Seoul, Korea, 5 – 8 July, 2009, DOI. 10.1109/ISIE.2009.5218250. 2009
- **M. Davari**, I. Salabeigi, G.B. Gharehpetian, S.H. Fathi, J. Milimonfared, "Application of Sigma-Delta Modulation in Multifunction Current Controller for Inverter-Based Distributed Generation," in Proceedings of 11th International Spanish-Portuguese Conference on Electrical Engineering (11CHILIE), ZARAGOZA, Spain, 1 – 4 July, 2009. 2009
- H. Nafisi, **M. Davari**, M. Abedi, G.B. Gharehpetian, "Using Fuzzy ARTmap Neural Network for Determination of Partial Discharge Location in Power Transformers," in Proceedings of International PowerTech Conference, BUCHAREST, Romania, 28 June – 2 July, 2009, DOI. 10.1109/PTC.2009.5281920. 2009

- **M. Davari**, S.M. Ale-Emran, H.Yazdanpanahi, G.B. Gharehpetian, "Modeling the Combination of UPQC and Photovoltaic Arrays with Multi-Input Single-Output DC-DC Converter," in Proceedings of IEEE/PES International Power Systems Conference and Exposition (PSCE 2009), Seattle, Washington, USA, March, 15 – 18, 2009, DOI. 10.1109/PSCE.2009.4840102. 2009
- **M. Davari**, S.M. Ale-Emran, A.R. Mobarhani, H. Nafisi, I. Salabeigi, G.B. Gharehpetian, "A Novel Approach to VFTO Analysis of Power Transformers Including FVL Based on Detailed Model," in Proceedings of IEEE International Conference on Industrial Technology (ICIT 2009), MONASH UNIVERSITY, GIPPSLAND, VICTORIA, AUSTRALIA, FEBRUARY, 10 – 13, 2009, DOI. 10.1109/ICIT.2009.4939548. 2009
- H. Yazdanpanahi, **M. Davari**, S.H. Hosseinian and G.B. Gharehpetian, "A Simple Approach to Determine Optimum Reserve Capacity in Deregulated Power Systems," in Proceedings of 23rd International Power System Conference, 30 November – 2 December, 2008, Tehran, Iran (in Persian). 2008
- H. Nafisi, **M. Davari**, B. Vahidi, "Corona and Electromagnetic Transient Study in Overhead Transmission Lines," in Proceedings of second International Conference on Modern Power Systems (MPS 2008), CLUJ-NAPOCA, ROMANIA 12 – 14 NOVEMBER 2008. 2008
- **M. Davari**, B. Abdi, H. Nafisi, G.B. Gharehpetian, H.R. Karshenas, "State Feedback Control of Boost Converter Using SI- Σ PWM Method," in Proceedings of IEEE 2nd International Conference on Power and Energy Conference (PECon 2008), Johor Bahru, Malaysia, December, 1 – 3, 2008, DOI. 10.1109/PECON.2008.4762472. 2008
- **M. Davari**, F. Toorani, H. Nafisi, M. Abedi, G.B. Gharehpetian, "Determination of Mean and Variance of LMP Using Probabilistic DCOPF and T-PEM," in Proceedings of IEEE 2nd International Conference on Power and Energy Conference (PECon 2008), Johor Bahru, Malaysia, December, 1 – 3, 2008, DOI. 10.1109/PECON.2008.4762673. 2008

RESEARCH PROJECTS

- **Overview of Protection Strategies in North American Microgrid Projects,** 2015 – 2017
R&D Project, Quanta-Technology
Resulted in a best paper of IEEE-PES General Meeting 2017.
- **Enhancement of Power-Hardware-In-the-Loop and Control-Hardware-In-the-Loop Simulation,** 2015 – 2017
R&D Project, Quanta-Technology
Resulted in a paper presented in 2015 CIGRE US National Committee Grid of the Future Symposium.
- **Stability and Robust Performance of the Hybrid Multi-Terminal AC/DC Power Systems in the Context of Smart-Grids** 2012 – 2017
My Ph.D. Thesis, University of Alberta, (Supervised by Prof. Yasser Abdel-rady I. Mohamed)
Resulted in 6 IEEE Transactions Journal papers and 1 IEEE Conference paper.
- **Design and Implementation of Sigma-Delta Modulation Based Inverter for Distributed Generation Applications,** 2008 – 2010
My M.Sc. Project, Department of Electrical Engineering, Amirkabir University of Technology, (Supervised by Prof. Gevork B. Gharehpetian)
Resulted in 4 international conference papers and 2 ISI Journal papers
- **Design and Implementation of a Three Phase Inverter Based on Intelligent-IGBT (Intelligent Power Module; IPM) for Laboratory Applications,** 2006 – 2007
B.Sc. Project, Department of Electrical and Computer Engineering, Isfahan University of Technology, (Supervised by Prof. Hamid Reza Karshenas)
- **Design and Implementation of a Data Acquisition Board in Order to Capture Online Data** 2008 – 2009
Research on Power System (FACTS) Lab, Department of Electrical Engineering Department, Amirkabir University of Technology, (Supervised by Prof. Gevork B. Gharehpetian)
- **Modeling the Combination of UPQC and Photovoltaic Arrays with Multi-Input Single-Output DC-DC Converter,** 2008 – 2009
Research on Power System (FACTS) Lab, Department of Electrical Engineering Department, Amirkabir University of Technology, (Supervised by Prof. Gevork B. Gharehpetian and Prof. Abedi)
Resulted in an international paper (PSCE 2009)
- **A New Method for Calculation of Very Fast Transient Overvoltage (VFTO) on Power Transformers Based on Detailed Model of Transformers,** 2008 – 2009
Research on Power System (FACTS) Lab, Department of Electrical Engineering Department, Amirkabir University of Technology, (Supervised by Prof. Gevork B. Gharehpetian)
Resulted in an international paper (ICIT 2009)

- **Determining of Optimum Reserve Capacity in Deregulated Power Systems,** 2008
Research on Power System (FACTS) Lab, Department of Electrical Engineering Department, Amirkabir University of Technology, (Supervised by Dr. Seyyed Hossein Hosseinian)
Resulted in an international paper (PSC 2008)
- **The Effect of Different Structures of Wind Farms on Overvoltage Produced by Lightning,** 2008
Research on Power System (FACTS) Lab, Department of Electrical Engineering Department, Amirkabir University of Technology, (Supervised by Prof. Gholam Hossein Riahy)
Resulted in an international paper (PSC 2008)
- **Analysis of DC/DC Converters Controlled by Sigma-Delta Modulation and State Feedback,** 2008
Research on Power System (FACTS) Lab, Department of Electrical Engineering Department, Amirkabir University of Technology, (Supervised by Prof. Gevork B. Gharehpetian and Prof. Jafar Milimonfared)
Resulted in an international paper (PECON 2008)
- **Calculation of Local Marginal Pricing (LMP) as a Random Variable in Power Market,** 2008
Research on Power System (FACTS) Lab, Department of Electrical Engineering Department, Amirkabir University of Technology, (Supervised by Prof. Mehrdad Abedi)
Resulted in an international paper (PECON 2008)

TEACHING ASSISTANTSHIPS

- **Power System Analysis** Fall 2013
*Undergraduate Course, with Prof. Venkata Dinavahi.
Department of Electrical and Computer Engineering, University of Alberta.*
- **Electric Machines** Winter 2013
*Undergraduate Course, with Prof. Andy Knight.
Department of Electrical and Computer Engineering, University of Alberta.*
- **Electric Machine I** Fall 2009
*Undergraduate Course, with Prof. Mehrdad Abedi.
Department of Biomedical Engineering, Amirkabir University of Technology.*
- **Advanced Topics on Power Systems II (Distributed Generations)** Spring 2009
*Graduate Course, with Prof. Gevork B. Gharehpetian.
Virtual (Web-Based) Education Graduate College, Amirkabir University of Technology.*
- **Industrial Electronics,** Spring 2009
*Undergraduate Course, with Dr. Hamid Fathi.
Department of Electrical Engineering, Amirkabir University of Technology.*
- **Industrial Electronics,** Fall 2008
*Undergraduate Course, with Dr. Hamid Fathi.
Department of Electrical Engineering, Amirkabir University of Technology*
- **Power Systems Analysis I,** Fall 2008
*Undergraduate Course, with Prof. Behrooz Vahidi.
Department of Electrical Engineering, Amirkabir University of Technology.*
- **Industrial Electronics,** Spring 2008
*Undergraduate Course, with Dr. Hamid Fathi.
Department of Electrical Engineering, Amirkabir University of Technology.*
- **Electric Circuits I and II,** Spring 2006
*Undergraduate Course, with Dr. Masood Omoomi.
Department of Electrical and Computer Engineering, Isfahan University of Technology.*

CERTIFICATIONS

- Completely Trained for Conducting System Studies with Digital Real-Time Power Systems Platform by RTDS Technologies, 2017 RTDS Applications & Technology Conference, Winnipeg, Manitoba, Canada. May 2017
- Completely Trained for Operating with Impedance Analyzer, (with Certification), Representative of Wayne Kerr Electronics Company, Held at Royal Tose Paydar Co., Tehran, Iran. Jan. 2009 – Feb. 2009

- Completely Trained for Operating with Real-Time Power Systems and Power Electronics Simulator by Opal-RT Technologies Inc, <http://www.opal-rt.com/electrical-power-systems>, via their customized on-site training, <http://www.opal-rt.com/opal-rt-training-academy>, (with Certification), Amirkabir University of Technology-Tehran Polytechnic (AUT), Tehran, Iran. Dec. 2008 – Jan. 2009
- Printed Circuit Board (PCB) Design and Implementation for Inverter Drive Board, Inverter Measurement Board, and Data Acquisition Board for Online Data Capturing, Isfahan University of Technology (IUT), Isfahan, Iran. Feb. 2007 – Sep. 2007
- Certified for Collaborating with Behrad Co. as Inverter Designer and Power Quality Engineer, Isfahan, Iran. Feb. 2007 – Sep. 2007

COMPUTER SKILLS

Engineering Software:

- MATLAB Including Robust Controller Synthesis Toolbox, Simulink, RT-LAB Toolbox (Designed by Opal-RT Tech.), RT-EVENTS Toolbox (Designed by Opal-RT Tech.), and ARTEMIS Toolbox (Designed by Opal-RT Tech.), SimPower Toolbox
- RSCAD (Real Time Digital Simulator-RTDS Software)
- Computer-Aided Protection Engineering (CAPE)
- OrCAD (PCB Designer, Capture and Capture CIS), Protel (DXP, 99SE)
- PSCAD
- EMTP and EMTP-RV
- PowerFactory (DIgSILENT)

Programming Language:

- M-File Programming (MATLAB)
- Fortran

INVITED TALKS

- **Dynamics, Robust Control, Power Management, and Protection of the Hybrid Multi-Terminal AC/DC Power Systems in Smart Grids: Conducted Researches and Future Research Trends,** May 2017
Department of Electrical Engineering and Automation, Aalto University, Helsinki, Finland
- **Dynamics, Robust Control, Power Management, and Protection of the Hybrid Multi-Terminal AC/DC Power Systems in Smart Grids: Conducted Researches and Future Research Trends,** Apr. 2017
Department of Electrical Engineering, Georgia Southern University, Statesboro, GA 30460, USA
- **Dynamics, Robust Control, Power Management, and Protection of the Hybrid Multi-Terminal AC/DC Power Systems in Smart Grids: Conducted Researches and Future Research Trends,** Jan. 2017
Electrical and Computer Engineering (ECE) Department, Southern Illinois University Carbondale, Carbondale, IL 62901, USA
- **Dynamics, Robust Control, Power Management, and Protection of the Hybrid Multi-Terminal AC/DC Power Systems in Smart Grids: Conducted Researches and Future Research Trends,** May 2016
Department of Electrical and Computer Engineering (ECE), Schulich School of Engineering, University of Calgary, Calgary, Ontario, Canada
- **Future Research Trends in Smart Grids,** Apr. 2016
School of Engineering, Cardiff University, Cardiff, Wales, United Kingdom (UK)
- **Design and Implementation of Sigma-Delta Modulation Based Inverter for Distributed Generation Applications,** Feb. 2011
Department of Information Technology and Electrical Engineering (D-ITET), Swiss Federal Institute of Technology at Zurich (ETH Zürich - Eidgenössische Technische Hochschule Zürich), Zurich, Switzerland

RESEARCH WORK EXPERIENCES

- Future Research Trends in Modernized Hybrid AC/DC Smart Power Systems; Modeling, Real-Time Simulation, Protection, Primary Control, Secondary Control, Supervisory Distributed Control, Automation, and Cyber Security**
*Assistant Professor in Power Systems and Power Electronics,
 Electrical and Computer Engineering Department,
 Allen E. Paulson College of Engineering and Information Technology,
 Georgia Southern University,
 Statesboro, GA 30460, USA*

Aug. 2017 –
Present
- Design and Development of Protection, Control, and Automation Systems for Smart Grids**
*Power Electronics, Power Systems, Automation, and Control R&D Engineer,
 Smart Power Distribution Grids,
 Quanta-Technology, Markham (Great Toronto Area), Ontario, Canada
 (Directed by Dr. Farid Katiraei)*

Apr. 2015 –
Jul. 2017
- Analysis, Synthesis, and Control of the Dynamics of Hybrid Multi-Terminal AC/DC Power Systems Employed in Smart-grids**
*Research Associate and Research Electrical Engineer,
 Distributed Power Grid Laboratory
 Electrical & Computer Engineering Department, University of Alberta, Edmonton, Alberta,
 Canada
 (Supervised by Prof. Yasser Abdel-Rady I. Mohamed)*

Jan. 2012 –
Present
- Real-Time Simulation and Implementation of Inverter Based-Distributed Generation with Considering Protection and Relay Issues**
*Research Assistance and Project Colleague,
 Iran's Grid Secure Operation Research Center and Iran's Electric Power Research Institute
 Power System Real-Time Simulation Laboratory, Amirkabir University of Technology.
 (Supervised by Prof. Gevork B. Gharehpetian)*

Jan. 2010 –
Dec. 2011

TEACHING WORK EXPERIENCES

- Course Instructor: Electric Circuits II**
*Department of Electrical and Computer Engineering,
 Georgia Southern University,
 Statesboro, GA 30460, USA*

Aug. 2017 –
Dec. 2017
- Course Instructor: Electric Circuits II**
*Department of Electrical and Computer Engineering,
 University of Alberta,
 Edmonton, Alberta, Canada*

Apr. 2014 –
Jun. 2014

REFERENCES

- Available Upon Request

Profession

Power Electronics Applications, Power Systems, Automation, Protection, and Control R&D Engineer-Senior Consultant

Years of Experience

4 years of industrial experience and 6 years of academic and research experience

Previous Industrial Position

Senior Consultant and R&D Associate in Power Electronics, Renewable Energies, Power Systems, Automation, Protection, and Control for Micro and Smart Grids

Summary

Masoud Davari received the B.Sc. degree (with Highest Distinction) in Electrical Engineering-Power from the Isfahan University of Technology, Isfahan, Iran, in September 2007, the M.Sc. degree (with Highest Distinction) in Electrical Engineering-Power from Amirkabir University of Technology-Tehran Polytechnic, Tehran, Iran, in January 2010, and the Ph.D. degree in Electrical Engineering-Energy Systems from the University of Alberta, Edmonton, AB, Canada, in January 2016. He has been working with Iran's Grid Secure Operation Research Center and Iran's Electric Power Research Institute in Tehran, Iran, from January 2010 to December 2011. From April 2015 to April 2016 and then from April 2016 to June 2017, he has been collaborating with Quanta-Technology Company within various projects funded by electric power utilities, e.g., *Southern California Edison (SCE)*, *San Diego Gas & Electric (SDG&E)*, *Commonwealth Edison (ComEd)*, *Florida Power & Light (FPL)*, *Hawaii Electric Company (HECO)*, *Xcel Energy*, *Minerals and Metals Group (MMG)*, etc., in the field of dynamic interaction of renewable energy systems with smart grids as well as protection, control, and automation of microgrids in addition to hybrid ac/dc power systems as a senior R&D specialist in energy systems related to smart grids and senior consultant, respectively. Afterwards, since July 2017, he has joined as a tenure-track Assistant Professor faculty member in the Department of Electrical and Computer Engineering of Allen E. Paulson College of Engineering and Information Technology at Georgia Southern University (GA Southern), Statesboro, GA, USA.

His research interests include dynamics and control of different types of power electronic converters, employed in the low/medium voltage power distribution systems, power transmission systems, multi-terminal dc (MTDC) grids, meshed high-voltage dc (HVDC) systems, and renewable energy harvesting systems, modeling, analysis, and control of ac, dc, hybrid ac/dc microgrids as well as smart grids, protection systems and schemes of hybrid ac/dc microgrids, and power management strategies in hybrid ac/dc smart grids considering energy storage systems.

During his graduate education at Amirkabir University and the University of Alberta and employment with Quanta-Technology Company, he has implemented and developed several experimental testbeds, namely, a scaled-down prototype for distributed generation (DG) resources and meshed MTDC systems as well as active power distribution systems for automation of modernized power grids. Besides, he has certificates in conducting real-time simulation for power systems and power electronics studies using Opal-RT as well as RTDS Technologies platforms for hardware-in-the-loop (HIL), power-hardware-in-the-loop (PHIL), and controller-hardware-in-the-loop (CHIL) testing of hybrid ac/dc power grids.

Dr. Davari has been an active member of the IEEE WG P2004, an IEEE working group on Hardware-In-the-Loop (HIL) simulation for IEEE Standards Association (***Recommended Practice for Hardware-in-the-Loop (HIL) Simulation-Based Testing of Electric Power Apparatus and Controls***), since June 2017; he served as the chair of the Literature Review Subgroup of DC@home Standards, IEEE Standards Association, from April 2014 to October 2015. He is the author, invited reviewer, and invited speaker of several IEEE-Transactions journals, IET journals, Energies journal, various conferences, diverse universities, and places from different societies. He is an invited Member of the Golden Key International Honour Society as well.

Industrial R&D Experiences

4/2015 – 7/2017

(Projects conducted for a specific utility arranged under the same name of the utility with which collaborated)

Quanta Technology LLC

Power Electronics, Power Systems, Automation, and Control R&D Engineer

Project with Commonwealth Edison (ComEd)

- Studied and analyzed ComEd microgrid in Bronzeville
- Modeled ComEd microgrid in PSCAD considering all participating Distributed Energy Resources (DERs) including PVs, batteries, and Combined Heat and Power (CHP) generations

- Synthesized the device controllers of all DERs in ComEd microgrid
Implemented the frequency load shedding scheme for prioritizing different sensitive and regular loads
- Modeled ComEd microgrid in Real-Time Digital Simulator (RTDS) platform using RSCAD software including DERs with their controllers as well as Phase Measurement Units (PMUs)
- Implemented the test setup for examining the functionality of different configurations of ComEd microgrid formed by Vista switches

Project with Xcel Energy – PSCo Wide Area Protection

- Checked the model of relays and protection schemes implemented in CAPE
- Automated and run wide-area protection and coordination studies

Project with Xcel Energy - PRC-023 Automation – Modeling

- Conducted study of NERC PRC-023 compliance on utility transmission system, including evaluation of distance relays, out-of-step, and switch-on-to-fault functionality
- Analyzed distance relays settings of SEL-311, -321, and -421 for 230 kV and 345 kV transmission lines
- Checked the Macro functionality of distance relays regarding coordination with line loadability and out-of-step settings

Project with Florida Power & Light (FPL)

- Modeled and simulated battery energy storage system connected to power distribution system
- Designed controller with functionality and controllability in both island and grid-connected modes
- Conducted short circuit studies of power distribution systems with and without energy storage system in both islanded and grid-connected modes

Project with Minerals and Metals Group (MMG)

- Conducted feasibility study and risk assessment of installing an NEC energy storage system in Kinsevere Mine

Project with Southern California Edison (SCE)

Inverter Control and Microgrid Protection

- Conducted literature survey of different pilot microgrid projects in the North America as well as Europe
- Investigated, analyzed, and studied different control methods employed in present microgrid pilot projects
- Investigated, analyzed, and studied different protection methods employed in present microgrid pilot projects in both islanded and grid-connected modes
- Wrote literature survey technical report

Project with San Diego Gas & Electric (SDG&E)

Power Quality Meter Testing and Verifications for Substation Automation

- Modeled a typical active power distribution system for real-time simulation and PHIL/CHIL testing using RTDS
- Modeled and simulated voltage/current harmonics for feeding ION, SATEC, and Siemens Power Quality meters
- Evaluated the performance and functionality of different Power Quality meters made by Schneider Electric, SATEC, and Siemens vendors

Distributed Control Architecture for Smart Grids Project Under Electric Program Investment Charge (EPIC)

- Modeled, controlled, and simulated three-phase PVs and batteries with automatic/local regulation capability for real-time simulation tests using RTDS
- Modeled, controlled, and simulated automatic voltage control devices including Voltage Regulators (VRs), Load Tap Changers (LTC) of transformers, and automatic capacitor controllers in RTDS
- Conducted PHIL/CHIL testing of VRs, LTCs, and automatic capacitor controller devices produced by Schweitzer Engineering Laboratories (SEL)

System Operations Development and Advancement Under Electric Program Investment Charge (EPIC)

- Modeled, controlled, and simulated single-phase PVs and batteries connected via the service XFMR for real-time simulation tests using RTDS

- Modeled, controlled, and simulated GridCo Systems, new, technology-based devices for controlling voltage in smart active distribution systems, in RTDS platform
- Conducted PHIL/CHIL testing of VRs, LTCs, and automatic capacitor controller devices produced by Schweitzer Engineering Laboratories (SEL)
- Modeled and conducted real-time simulation of PMUs for streaming the critical information of the active power distribution system including voltage phase, amplitude, frequency, and the rate of frequency variations

Residential Hybrid Energy Management System with EV and PVs

- Designed, implemented, and tested laboratory setups as well as required interface circuits

Vehicle to Grid Integration

- Modeled, designed, simulated, and implemented an interface for Electric Vehicle (EV) charger stations employed in distribution systems

Integrated Volt-Var Management

- Modeled and simulated power distribution systems including power electronic converters in a real-time digital simulator
- Programmed SEL-3530 Real-Time Automation Controller (RTAC) for load flow and communication
- Designed required interface circuit for the purpose of the Power Hardware-In-the-Loop (PHIL) simulation testing
- PHIL simulated Volt-Var management systems in a laboratory setup.
- Proposed PHIL simulation methods to have stability and improved performance

Demand Aggregator for EV Charging

- Modeled, analyzed, and implemented a test bed of demand aggregator for EV charger stations

Project with Hawaii Electric Company (HECO)

Transformer Inrush Study for West Side Waiver IRS

- Modeled and simulated the inrush current of distributed generation transformers for connecting photovoltaic systems to the power distribution systems