

Hanif Livani, PhD

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Professional Experiences

University of Nevada, Reno, NV
Assistant Professor

2014-present

Virginia Tech, Blacksburg, VA
Research Assistant

2011-2014

- Worked on a research project for reliable integration of renewable energy into smart power systems.
 - Develop an auxiliary function for Energy Management Systems (EMS) which incorporate wind and load forecasting to state estimation and forecasting.
- Developed an intelligent fault location method for smart power systems using data mining algorithm.
- Developed a smart fault management and automation method for distribution networks using state of the art PMU data and machine learning algorithm.

Midcontinent Independent Transmission System Operator, St. Paul, MN **Summer 2013**
Transmission Asset Management Intern

- Assisted on development of Midcontinent ISO (MISO) transient stability (dynamic) models for Transmission Expansion Planning (MTEP) studies.
 - Established a process & procedure for deriving generic wind turbine generator model parameters for dynamic studies.
 - Demonstrated the developed process on a number of manufacture specific wind turbine generator models; GE, Siemens and Vestas.

University of Nevada, Reno, NV
Research Assistant

2009-2011

- Worked on a research project “Assessment of alternative energy applications at the Nevada Department of Transportation (NDOT)”.
 - Assessed the prospects of significant renewable energy development and energy conservation methodologies at NDOT facilities (i.e., office buildings, roadway systems, parking areas, remote stations, etc.).
 - Proposed potential applications of wind, solar, and geothermal sources at NDOT facilities and roadway systems.
- Worked on a research project in collaboration with Desert Research Institute (DRI), a wind farm developer and a hydro pump storage firm in Nevada “Forecasting Wind and Solar Resources and Renewable Energy Storage Feasibility in Complex Terrain”.
 - Created a method of integrating this resource assessment into the utility grid for residential use and stand-alone applications.

- Worked on a research project for reliable integration of renewable energy into smart power systems.
 - Developed an improved wind power forecasting method for advanced EMS applications.

Education

Virginia Tech, Blacksburg, VA
Ph.D. in Electrical Engineering

2011-2014

Advisor: Dr. Cansin Yaman Evrenosoglu
Thesis Title: *Intelligent fault location for smart power grids*
Graduation Date: May 2014

University of Nevada, Reno, NV
M.S. in Electrical Engineering

2009-2011

Advisor: Dr. Cansin Yaman Evrenosoglu

Research Interests

- Signal processing and machine learning applications in smart grid,
- Electric energy market,
- Renewable energy systems,
- State estimation in power system,
- Smart grid technologies and distribution automation,
- Application of PMU in transmission/distribution network,

Scholarships & Awards

- **Scholarships**
 - ✓ Association of Energy Engineers. July 2013.
 - ✓ World Energy Engineering Congress, Washington, DC, September 2013.
- **Awards**
 - ✓ Virginia Tech graduate student association grant to attend IEEE PES T&D, May 2012.
 - ✓ UNR graduate student association grant to attend IEEE PES general meeting, July 2011.
 - ✓ UNR graduate student association grant to attend IEEE PES general meeting, July 2010.

Refereed Journal Publications

- **H. Livani**, S. Jafarzadeh, C. Y. Evrenosoglu, and M. S. Fadali, "A Unified Approach for Power System Predictive Operations using Viterbi Algorithm," IEEE Transaction on Sustainable Energy. vol. 5, no. 3, pp. 757-766, July 2014.
- **H. Livani** and C. Y. Evrenosoglu, "A Fault Classification and Location Method for Three-Terminal Circuits using Machine Learning". IEEE Transaction on Power Delivery. vol. 28, no. 4, pp. 2282-2290, Oct 2013.
- **H. Livani** and C. Y. Evrenosoglu, "A Machine Learning and Wavelet-based Fault Location Method for Hybrid Transmission Lines". IEEE Transaction on Smart Grid, vol. 5, no. 1, pp. 51-59, Jan 2014.
- **H. Livani** and C.Y. Evrenosoglu, "A Single-Ended Fault Location Method for Segmented HVDC Transmission Line," Electric Power System Research, vol. 107, pp. 190-198, Feb 2014.
- **H. Livani**, M. Bandarabadi, Y. Alinejad, S. Lesan and H. Karimi-Davijani, "Improvement of Fault Ride-Through Capability in Wind Farms Using VSC-HVDC", European Journal of Scientific Research ISSN 1450-216X Vol.28 No.3, pp.328-337, (2009).
- H. Ezoji, A. Sheikholeslami, M. Rezanezhad and **H. Livani**, "A new control method for Dynamic Voltage Restorer with asymmetrical inverter legs based on fuzzy logic controller" Elsevier, Simulation Modeling Practice and Theory, Volume 18, Issue 6, pp. 806-819, June 2010.
- H. Karimi-Davijani, A. Sheikholeslami, **H. Livani**, M. Karimi-Davijani, "Fuzzy logic Control of Doubly Fed Induction Generator Wind Turbine" World Applied Science Journal (WASJ). Volume 6, No 4, pp. 499-508, 2009, ISSN 1818-4952, (2009).

Peer-reviewed Conference Publications

- **H. Livani**, S. Jafarzadeh, M. S. Fadali, and C. Y. Evrenosoglu, "Power System State Forecasting using Fuzzy-Viterbi Algorithm," Proceedings of IEEE Power and Energy Society (PES) General Meeting, Washington DC, July 2014.
- **H. Livani** and C. Y. Evrenosoglu, and V. A. Centeno, "A Machine Learning-Based Faulty Line Identification for Smart Distribution Network". Proceedings of North American Power Symposium (NAPS), Manhattan, KS, Sep 2013.
- **H. Livani** and C. Y. Evrenosoglu, "A Hybrid Fault Location Method for Overhead Line Combined with Underground Cable using DWT and SVM". Proceedings of IEEE Power and Energy Society (PES) General Meeting, San Diego, July 2012.
- **H. Livani** and C. Y. Evrenosoglu, "A Fault Classification Method in Power Systems Using DWT and SVM Classifier". Proceedings of IEEE Power and Energy Society (PES) Transmission and Distribution (T&D), Orlando, May 2012.
- **H. Livani**, S. Jafarzadeh, C. Y. Evrenosoglu, and M. 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.
- **H. Livani** and C. Y. Evrenosoglu, "A Traveling Wave Based Single-Ended Fault Location Algorithm using DWT for Overhead Lines Combined with Underground Cables".

Proceedings of IEEE Power and Energy Society (PES) General Meeting, Minneapolis, July 2010.

- S. Jafarzadeh, M. S. Fadali, C. Y. Evrenosoglu and **H. Livani**, "Hour-Ahead Wind Power Prediction for Power Systems using Hidden Markov Models and Viterbi Algorithm". Proceedings of IEEE Power and Energy Society (PES) General Meeting, Minneapolis, July 2010.
- **H. Livani**, J. Rouhi, S. Lesan, and H. Karimi-Davijani, " Improvement of Voltage Quality in Connection of Wind Farms to Transmission Network using VSC-HVDC ", Proceedings of IEEE 6th Power Quality and Supply Reliability Conference (PQ2008), Pärnu, Estonia, 27-29 August 2008, pp.137-142.
- **H. Livani**, J. Rouhi, H. Karimi-Davijani, "Voltage Stabilization in Connection of Wind Farms to Transmission Network Using VSC-HVDC ", Proceedings of IEEE 43rd International Universities Power Engineering Conference (UPEC2008), Padova, Italy, 1-4 September 2008, pp. 1-5.
- H. Karimi-Davijani, A. Sheikholeslami, **H. Livani**, and Naser Norouzi, " Fault Ride-Through Capability Improvement of Wind Farms Using Doubly Fed Induction Generator," Proceedings of IEEE 43rd International Universities Power Engineering Conference (UPEC2008), Padova, Italy, 1-4 September 2008, pp. 1-5.
- H. Karimi-Davijani, A. Sheikholeslami, R. Ahmadi, and **H. Livani**, " Active and reactive Power control of DFIG Using SVPWM converter, " Proceedings of IEEE 43rd International Universities Power Engineering Conference (UPEC2008), Padova, Italy, 1-4 September 2008, pp. 1-5.

Technical Reports

- Assessment of alternative energy applications at the Nevada department of transportation (NDOT). July 2010.
- Forecasting wind and solar resources and renewable energy storage feasibility in complex terrain.

Teaching Experiences

University of Nevada Reno, Reno, Nevada

Fall 2014

- Computer methods for electrical engineers

Professional Activities

- **Invited Workshops**
 - Renewable energy and Future of Nevada, College of Engineering, University of Nevada, Reno, Spring 2010
 - Renewable energy and Future of Nevada, College of Engineering, University of Nevada, Reno, Spring 2011

- **Organizer**
 - 28th Annual Graduate Research Symposium, Virginia Tech, Blacksburg, March 2012.
- **Journal Reviewer**
 - IEEE Transactions on Power Systems
 - IEEE Transactions on Power Delivery
 - IEEE Transactions on Energy Conversion
 - Electric Power Systems Research
 - International Journal of Electrical Power and Energy Systems
 - Wiley Asian Journal of Control
- **Conference Reviewer**
 - ASME Power Conference, Boston, July 2013.
- **Membership**
 - Institute of Electrical & Electronics Engineers (IEEE)
 - IEEE Power and Energy Society
 - Association of Energy Engineers