SANTOSH SHARMA

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Summary

Self-motivated Research Assistant with a background in power system restoration and resilience, and coordination of distribution-level water-energy systems, and coordination of electric vehicles-infused transportation and power distribution systems. Willing to learn anything, including but not limited to the coordinated operation of interdependent systems (normal and emergency state, applications of machine learning techniques and data analytics in energy systems.

Skills

- Proficient in MATLAB programming and Simulink, Python Programming, Power World Simulator, Power System Simulator (PSS/E), and OpenDSS.
- Proficient in optimization tools and software: JULIA, YALMIP, PYOMO, GAMS, and AMPL.
- Web development using Javascript, html, and css
- Version control using git and github
- Basics of C, C++, JAVA, R, MySQL, PSCAD, GridLAB-D, Opal-RT, and LabVIEW.
- Proficient in using Microsoft Office applications.
- Good communication and written English.
- Comfortable working in a team.

Experience

Graduate Research Assistant   08/2018 to Present
University of Central Florida   Orlando, FL
- Working on the coordinated operation of water-energy nexus under normal and emergency conditions for renewables integration: decentralized and distributed optimization.
- Working on the coordination of transmission, distribution, and communication systems for prompt power system recovery after disasters.

Ph.D. Intern - Power Systems Research Intern   06/2019 to 08/2019
Pacific Northwest National Laboratory   Richland, WA
- Developed a framework for the coordinated restoration of transmission and distribution systems.
- Designed optimization models for distribution system restoration.

Undergraduate Research Mentor   08/2019 to Present
University of Central Florida   Orlando, FL
- Mentored 3 undergraduate students in their research projects related to power systems operation.

Graduate Teaching Assistant   08/2017 to 05/2018
Binghamton University   Binghamton, NY
- Facilitated learning of (EECE 212) Electric Circuits through student-centered laboratory experiments.
- Performed homework help-sessions and academic tutoring in (EECE 332) Semiconductor Devices.

Graduate Teaching Assistant   08/2019 to Present
University of Central Florida   Orlando, FL
- Facilitated learning of (EEE 3307) Electronics I through students-oriented laboratory experiments.
- Facilitated grading of (EEL 4298) Power System Economics and (EEE 3307) Electronics I.

Education and Training

Ph.D.: **Electrical Engineering**
University of Central Florida   Orlando, FL
- **Year:** August 2018 - Present
- **GPA:** 3.97

Ph.D.: **Electrical Engineering**
SUNY at Binghamton   Binghamton, NY
- **Year:** August 2017 - May 2018
- **GPA:** 3.88

Bachelor of Science: **Electrical Engineering**
Tribhuvan University   Kathmandu, Nepal
- **Year:** October 2011 - March 2016
- **Major:** Power & Energy Systems
- **Percentage:** 72% (First division)

Important Courses

- Power System Optimization (Convex Optimization)
- Data Analytics in Power Systems
- Adaptive Control Systems
- Machine Learning
- Power System Resilience
- Distributed Control and Optimization for Smart Grids
- Communication and Networking for Smart Grids
- Power Systems II: Protection and Control
- Optimization Theory
- Network Optimization

Publications

- S. Sharma, Q. Huang, A. Tbaileh, and Q. Li, "Scenario-based analysis for disaster-resilient restoration of distribution systems", *51st North American Power Symposium*, Wichita State University, KS, USA, Oct. 13-15, 2019.
- S. Sharma, Q. Li, Q. Huang, & A. Tbaileh. Achieving Disaster-Resilient Distribution Systems via Emergency Response Resources: A Practical Approach. *Under review. arXiv preprint arXiv:2008.09539.*
- S. Sharma, & Q. Li. A Mixed-Integer Boundary Compatible Decentralized Optimization Algorithm with Application in Energy-Water Nexus. *Under review.*
- S. Sharma, & Q. Li. A Novel Decentralized Algorithm for Coordinating the Optimal Power and Traffic Flows with EVs. *Under review.*
- S. Pokharel, S. Sharma, A. Dimitrovski, M. Todorovski. Optimal Power Flow in Power Systems with Variable Series Impedances. *To be submitted.*
- A. Tbaileh, Q. Nguyen, S. Sharma, Q. Huang, Q. Li, R. Sun, R. Liu. Coordinating Blackstart of Transmission and Distribution Systems with Centralized and Distributed Blackstart Resources. *Submitted to IEEE Transactions on Sustainable Energy.*

Activities and Honors

- Peer reviewer at CSEE Journal of Power and Energy Systems and IET Energy Systems Integration.
- Brown bag presentation on progress of the project "Coordination of Transmission, Distribution and Communication Systems for Prompt Power System Recovery after Disasters" at Pacific Northwest National Laboratory on 20th August, 2019.
- Graduate Student Member of IEEE since 2018; Member of IEEE Power and Energy Society since 2018
- Certified as Electrical Engineer from Nepal Engineering Council, Nepal (2017).
- Various class projects:

- Evaluation of DC (direct current), AC (alternating current), and SDP (semidefinite programming) optimal power flow using IEEE 14 and 118 bus test cases
  - Bulk transmission lines restoration using supervised learning algorithms
  - Machine learning to predict weather-induced power outages: A survey
  - Physics-guided deep neural network for optimal water flow problem
  - Steady state and dynamic analysis of IEEE 9 bus test case under three-phase fault conditions using PSSE
  - Implementation of distributed optimization algorithm for economic dispatch of a test power system
  - Implementation of optimal generator start up sequence for the blackstart of generator units
  - Coordination of transmission and distribution systems in load restoration using integrated (centralized) approach
  - Design of battery management systems using Arduino Uno
- Various online courses:
  - The Complete Web Development Bootcamp
  - Complete Python Bootcamp: Python
  - Blockchain
  - Artificial Intelligence
  - Deep Learning
  - Machine Learning
  - Java Tutorial for Beginners
  - MySQL for Beginners