Rahul Ranjan Jha

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EDUCATION

- Ph.D. in Power Engineering , Washington State University, Pullman, WA   Aug 2016 – Dec 2020
  - Cumulative GPA: 3.7 / 4.0
  - Thesis: Network-level Optimization for Volt/VAR Control in Unbalanced Electric Power Distribution Systems

- M.Tech in Power and Control, Indian Institute of Technology, Kanpur, India   Jul 2013 – Jul 2015
  - Thesis: Development of Control Strategies for Power Management with Renewable Resources
  - Cumulative GPA: 8.8/10.0

- B.Tech in Electrical and Electronics Engineering, Cochin University of Science and Technology, Kochi, India   Jul 2008 – May 2012
  - Senior Design Project: Ball and Beam System Experiment and Simulation with PID Controller
  - Cumulative GPA: 81.8/100.0

RESEARCH EXPERIENCE

Research Assistant,

- Washington State University   Aug 2016 –Dec 2020

Project: Advance Distributed Management System
  - Supervisors: Dr Anamika Dubey and Prof. Anjan Bose
  - The project is in collaboration with Pacific Northwest National Laboratory. The focus of the project is to develop Volt-VAR optimization application on GridAPPS-D.
  - The three phase unbalanced power flow is proposed which is used for the optimization of the distribution system. The modelling of the capacitor banks, voltage regulators and load (linear CVR effect) in the distribution system. Conservation voltage reduction using capacitor banks, voltage regulators and smart inverter.
  - Reducing the voltage variability cause due to photvoltaic installation at a bus using smart inverter. The control signal are provided to smart inverter by interfacing of Matlab and OpenDSS.
  - Proposed a sequential linear programming and iterative convex programming to reduce the computation time required to solve the optimal power flow problem in a three-phase unbalanced distribution system.

- Indian Institute of Technology, Kanpur   Jul 2013 – Jul 2015

Thesis: Development of Control Strategies for Power Management with Renewable Resources
  - Adviser: Prof. S.C.Srivastava
  - Integration of Photovoltaic ,Wind Turbines and Battery Energy Storage System to the grid using PID, Fuzzy logic and ANFIS control.
  - Modeling a cluster of house with Photovoltaic and Battery Energy Storage System and management of power flow under various load condition.

PUBLICATIONS

JOURNALS

[1]   Rahul R Jha; Shiva Poudel;Poorva Sharma; Anamika Dubey and Kevin P. Schneider, "Volt/VAR Optimization (VVO) in an ADMS Environment Using GridAPPS-D," (submitted to IEEE Access).

[2]   Hongda Ren ; Rahul R. Jha; Anamika Dubey and Noel N. Schulz, "Extremum-Seeking Adaptive-Droop for Model-free and Localized Volt-VAR Optimization," (Second Revision in IEEE Transactions on Power Systems).

[3]   R. R. Jha and A. Dubey, "Network-Level Optimization for Unbalanced Power Distribution System: Approximation and Relaxation," in IEEE Transactions on Power Systems

[4]   M. Ostadijafari, R. R. Jha and A. Dubey, "Demand-Side Participation via Economic Bidding of Responsive Loads and Local Energy Resources," in IEEE Open Access Journal of Power and Energy, vol. 8, pp. 11-22, 2021.

[5]   Rahul R Jha; Anamika Dubey and Kevin P. Schneider, "Conservation voltage reduction (CVR) via two   timescale control in unbalanced power distribution systems," in IET Smart Grid,vol. 3, Pages 801-813, 2020.

[6]   R. R. Jha, A. Dubey, C. Liu and K. P. Schneider, "Bi-Level Volt-VAR Optimization to Coordinate Smart Inverters With Voltage Control Devices," in IEEE Transactions on Power Systems, vol. 34, no. 3, pp. 1801-1813, May 2019.

[7]   R. R. Jha; S. C. Srivastava and M. Kumar, "Development of Control Schemes for a Cluster of PV-Integrated Houses in Islanded mode," in IET Renewable Power Generation, vol. 11, no. 7, pp. 903-911, 2017.

CONFERENCES

[1] Rabayet Sadnan; Rahul R Jha and Anamika Dubey,"Distributed Voltage Control for Network-level Optimization in Radial Power Distribution Systems", 2021 North American Power Symposium (NAPS), Tempe, AZ, USA, 2021.

[2] R. R. Jha and A. Dubey, "Coordinated Voltage Control for Conservation Voltage Reduction in Power Distribution Systems," 2020 IEEE Power and Energy Society General Meeting (PESGM), Montreal, QC, Canada, 2020.

[3] M. Ostadijafari, R. R. Jha and A. Dubey, "Aggregation and Bidding of Residential Demand Response into Wholesale Market," 2020 IEEE Texas Power and Energy Conference (TPEC), College Station, TX, USA, 2020.

[4] R. R. Jha, A. Dubey, T. Hong and D. Zhao, "Distributed Algorithm for Volt - VAr Optimization in Unbalanced Distribution System," 2020 IEEE Power Energy Society Innovative Smart Grid Technologies Conference (ISGT), Washington, DC, USA, 2020.

[5] R. R. Jha and A. Dubey, "Local Smart Inverter Control to Mitigate the Effects of Photovoltaic (PV) Generation Variability," 2019 North American Power Symposium (NAPS), Wichita, KS, USA, 2019.

[6] M. Ostadijafari, R. R. Jha and A. Dubey, "Conservation Voltage Reduction by Coordinating Legacy Devices, Smart Inverters and Battery," 2019 North American Power Symposium (NAPS), Wichita, KS, USA, 2019.

[7] R. R. Jha and A. Dubey, "Exact Distribution Optimal Power Flow (D-OPF) Model using Convex Iteration Technique," 2019 IEEE Power and Energy Society General Meeting (PESGM), Atlanta, GA, USA, 2019.

[8] R. R. Jha and G. Pandey, "Internal model based current control for grid integrated solar photovoltaic," 2017 7th International Conference on Power Systems (ICPS), Pune, India, 2017.

[9] R. R. Jha and S. C. Srivastava, "Fuzzy Logic and ANFIS controller for grid integration of Solar PhotoVoltaic," 2016 IEEE 6th International Conference on Power Systems (ICPS), New Delhi, India, 2016.

WORK EXPERIENCE	**FULL TIME POSITION**

GE Digital, 19015 North Creek Parkway Bothell, WA 98011 USA,   Aug 2020 – Present Day

Working on mitigating issues related to the application developed by GE. Working on supporting the customers with the technical issue related to application.

INTERNSHIP

Argonne National Laboratory,   May 2019 – Aug 2019

Performed a survey on the cost and efficiency assessment tool for the AC and DC distribution grids. Developed a distributed algorithm for the three-phase unbalanced distribution system for conservation voltage reduction.

National Renewable Energy Laboratory,   May 2018 – Aug 2018

The performance of the Xcel feeders are evaluated by installing ENGO devices at the secondary of the distribution transformer. The power flow analysis is performed by interfacing REopt and OpenDSS using python.

GE India Technology Centre Pvt. Ltd.,   May 2014 – Jul 2014

Worked on deriving the sensor less control techniques for Sine fed Switched Reluctance Motor. The simulation is performed on Matlab/Simulink to verify the sensor and sensor less control techniques.

AWARDS & SCHOLARSHIPS	

- 3 Minute Thesis presentations,2020
  Secured third position at college level competition
- POSOCO Power System Awards, 2016
  Awarded for Masters research excellence in power system.
- University Grants Commission, Scholarship
  Awarded for the academic excellence during junior and senior year of undergraduate.

OTHER WORK EXPERIENCE	**Teaching Assistance**, Indian Institute of Technology, Kanpur

- Teaching Assistant for the EE 330 course (Power Systems) during August-November 2014.
- Teaching Assistant and Lab instructor for the ESO 203 course (Basics of Electrical Engineering) during December 2014-April 2015.
- Research Assistant, worked on developing DC microgrid on RTDS/RSCAD platform.