

## **SATISH J. RANADE, Ph. D., LF-IEEE**

Klipsch School of Electrical & Computer Engineering.

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### **CURRENT POSITION**

Emeritus Professor Klipsch School of Electrical & Computer Engineering

Distinguished Achievement Professor

Have also served as:

PNM Chair in Utility Management

Director, Electric Utility Management Program

Klipsch Distinguished Professor

Department Head, Electrical and Computer Engineering 2012-2018

New Mexico State University, Las Cruces, New Mexico 88003.

### **EDUCATION**

Ph.D., University of Florida, July 1981.

Doctoral Dissertation: "A Reliability Analysis Technique for Power System Planning."

MSEE, New Mexico State University, August 1977.

Master's Thesis: "The Nature and Effects of Current Unbalances in Untransposed O.H.T. Lines."

B. E., Indian Institute of Science, Bangalore (India), August 1976.

Thesis: "A Solid State Induction-Motor Drive."

B.Sc., Saugar University, Sagar (India), September 1973.

## EXPERIENCE

New Mexico State University, 1981-to date, Teaching and Research in Power Systems, Electric Machinery and Power Electronics.

El Paso Electric Co., Consultant, 1990-, various projects including Development of ATP model for comprehensive relay testing, analysis of system disturbances, imaging techniques for cable inspection/metrology, relay evaluation and testing. New standard design for surge arrester application in underground systems. Methodology for IRP.

ABB, Wichita Falls, Short Course Instructor in Harmonics in Power System; Analysis of filter problems; Development of an expert system for filter design.

EDSA Micro, Consultant, 1992-, V&V of EDSA Harmonics, special applications to UPS based system harmonic analysis, consultant for analysis modules.

Excellence Through Managed Automation (EMA Inc.), Development and Application of Energy Management/Pump Scheduling software for the City of Albuquerque and Colorado Springs Utilities.

Sandia National Laboratories, Albuquerque, Research in electronic power conversion for storage systems

Public Service Co. Of New Mexico, Load response testing and dynamic system monitors.

Public Service Co. Of New Mexico, Summer and Winter 1983, Operations Engineer. Developed and justified "POPS" project to allow for better tracking of energy transactions and generator control. The project was implemented by PNM engineers and has worked successfully.

Leeds Hill Herkenhoff and City of Albuquerque, Summer 1987-1989, consultant, motor application SCADA/Application Software. Participated in specification development for AUTO 8, a water-system SCADA/optimization environment; Wrote specification for software for load-forecasting and pumping optimization under time-of-use rates; also specified a "data-base-access-handler" that allows a user to access data-base items through a simple specification and create a binary file of history points for use by other software; participated in design reviews and test and provided technical guidance; performed field testing.

Teaching and Research Assistant, University of Florida, Gainesville, 1977-1981. Teaching Assistant, New Mexico State University, Las Cruces, 1976-1977. Tata Iron and Steel Co. (India), Summer 1973, Trainee-Power Plant and Repair Shop; Tata Electric R & D Un(India), Summer 1974, Trainee, Chopper Drive Design; Kirloskar Electric (India), Summer 1975, Trainee, Large Induction Motor design and transient analysis.

## AWARDS

NMAEE Award for Energy Engineer of the Year, New Mexico Association of Energy Engineers, Albuquerque, NM, 2013

College of Engineering, New Mexico State University, Bromilow Teaching Award, 2012

New Mexico State University, Millionaire Research Award, 2011, 2012

Institute of Electrical and Electronics Engineers, Power Engineering Society Distinguished Service Award, 2005

Institute of Electrical and Electronics Engineers, Power Engineering Society Working Group Recognition award for the Task Force organized tutorial on "Harmonics Modeling and Simulation", 2001

Institute of Electrical and Electronics Engineers, T. Burke Hayes/Power Engineering Society, Faculty Recognition Award, 1990

Institute of Electrical and Electronics Engineers, T. Burke Hayes/Power Engineering Society, Faculty Recognition Award, 1996.

Public Service Company of New Mexico Foundation, Inc., Distinguished Educator Award, 1988,

Public Service Company of New Mexico Foundation, Inc., Distinguished Educator Award, 1989.

EE Department, University of Florida, Gainesville, Outstanding Graduate Assistant, March 1980, March 1981.

EE Department, Indian Institute of Science, Bangalore, Best Technical Report. 1976.

Institution of Engineers (India) Award for the design of a Thyristor Chopper traction drive, 1975

Saugar University, Sagar, India, University Gold Medal (B.Sc.), 1973.

## TEACHING AND RELATED ACTIVITIES

### Courses

Electromechanical Energy Conversion

Power Systems I, II and III

\* Power Electronics

\* Power System Planning

\* Power System Operations

\* Operations Research

Power System Stability

\* Power System Design

\* Power System Transients

Signals and Systems

Overall responsibility for Electric Machinery Laboratory.

\* New Course

### Distance Education

NMSU's Electric Utility Management Program delivers the MSEE degree and Graduate Certificate in Energy Systems, via distance education.

### Continuing Education

Director, Spring Short Course Series in Power Systems, NMSU, 1990-1997

EDSA Micro, Harmonics Workshop (Windsor, 1995, Detroit, 1995, San Diego

1997) IEEE Power engineering Society Tutorial " Harmonics Modeling and

Simulation", Tampa(1998), San Diego(1999), New Orleans(2000, Chairman)

IEEE IAS Petrochemical conference Tutorial " Power System Harmonics", San Antonio, 2001

ABB, Power Factor Correction and Harmonics 1995-1997

El Paso Electric Co., Phase Shifters, Protection

New Mexico Rural Electric Coop Association, Deregulation Workshop(1997),

## **RESEARCH AREAS**

Power System Operations, Optimization, Control, and Analysis; Artificial Intelligence Applications, Electric Machine Control and Power Electronics; Photovoltaics.

Water System Electric Use Optimization

## **GRANTS AND CONTRACTS**

### Funded Education/Outreach Grants

The Electric Utility Management Program -Funded entirely by the Electric Utility Industry: EUMP has provided financial support for over 300 domestic students to pursue the MSEE in power systems.(Program has been funded since 1968; I have been Director since 2003)

An Integrated Power Systems laboratory, Oct. 2002-Oct. 2003, DOD/AFOSR, Equipment, six-station asset serves as the instructional laboratory for power systems and power electronic and can be operated as a microgrid.

Undergraduate Directed Mentoring Program, - Funded by the Utility Industry. Provides financial support through employment in the power laboratory

Capstone Design Class, 2002-2012 Sandia National Laboratories

Development of Power Electronics Laboratory, PNM Foundation, Inc. Development of a Power System Design Class, PNM Foundation, Inc.,

### Funded Research Contracts and Grants:

NSF EPSCOR (NM EPSCOR) SMART CENTER Co-PI, Research Goal Co-Lead, 2018-2023,

NSF CREST Center iCredits (Smartgrids) 2020-2025, Co-PI and Codirector

NSF CREST Center iCredits (Smartgrids) 2013-2019, Co-PI and Codirector until retirement

Extreme Storage Sandia National Laboratory/USDOE (ESS/OE) 2017-2019

Advanced Power Electronics Sandia National Laboratory/USDOE (ESS/OE) 2017-2019

LDRD Microgrid Design and Control, Sandia National Laboratory, 2018-

Resilient Alaskan Distribution (RADIANCE), INL GMLC/USDOE, July 2018-September 2019.

SETI – Smart Energy Technology Initiative Mobile Renewable Energy Microgrid ( PSL Subaward) US Army /WSMR

Energy Technologies Research and Education Initiative (ID: 21149) (CO-PI) US Department of Energy/Golden Field Office Co-PI

Microgrid Design (ID: 22358) (PI) Raytheon (PI)

Microgrid System Operation (ID: 22175) (PI) Intel Corporation

Network Primary Model Development (ID: 21066) (CO-PI) Pacific Gas & Electric Company

Energy Storage for Power System stability, SNL, 2002-2012

A Holistic Approach to customer-driven Microgrids N S F 2006-2010

Novel approach to distributed SMES, LANL/DOE 2006-2008

Distributed Generation Islanding, DOE 2003-2006

Device to Improve DG Transient Loadability, DOE 2000

Power System Vulnerability, NMIMT, with R. Paz 1999-2000

Power System Reliability, Sandia Lab, 1997-2000

Advanced Load Modeling, PNM/EPRI, Tristate/EPRI, Entergy/EPRI 1997- 2001 \$ 400K

Power Quality Study, with H. Smolleck, 2001- \$67K

Facilities Design for Deregulation, Camp Pendleton, 1997, \$15K

Performance Modeling of Utility size Photovoltaic Arrays, Sandia, 1996 \$30K

Information Processing from Contingency Analysis, Los Angeles Department of Water and Power, 1989-1994

Los Alamos Electric Power Study, 1989-1994, with H. A. Smolleck,

Self-Excitation in Induction Generators, Bonneville Power Administration, 1989-1990,

Islanding in Photovoltaic Systems, SNL, 1986-1988

Assessment of the Magnetostatic Detection of Needle Content in Surgical Suture Packets,  
Ethicon(Johnson & Johnson), Albuquerque, 1990,

Further analysis of Harmonics, Sandia National Laboratories, 1985

Impact of Photovoltaic interconnection on distribution systems, Sandia National Laboratories;  
1982-1984

## PUBLICATIONS

### A. Patents

1. Satish Ranade, Nancy Clark, Stan Atcitty, John Boyes, "Enhanced Distributed Energy Resource System", US Patent 7239044

### B. Tutorial/Book Chapters

1. S. J. Ranade, W. Xu, " Overview of Harmonics" Chapter 1, in IEEE Tutorial on Harmonics Modeling and Simulation, 1998
2. W. Xu, S. J. Ranade, " Harmonics in Unbalanced Systems" Chapter 6, in IEEE Tutorial on Harmonics Modeling and Simulation, 1998
3. S. J. Ranade, W. Xu, " Overview of Harmonics" Chapter 1, in IEEE Tutorial on
4. Harmonics Modeling and Simulation, 2007

### C. Testimony

1. "Electric Transmission and Distribution Efficiency" before the Science, Technology and Telecommunications committee, State of New Mexico, Hon. Senator Stephen Fischmann, Chair, September 27, 2010, Santa Fe, NM
2. "Electric Energy Delivery" before the Science, Technology and Telecommunications Committee State of New Mexico, Hon. Senator Timothy M. Keller, Chair, August 1, 2012, Hobbs, NM

### D. Journal

1. S. J. Ranade, R. L. Sullivan, "A Reliability Analysis Technique for Bulk System Planning," presented at the IEEE Winter Power Meeting, Atlanta, Feb. 1-6, 1981, IEEE Transactions on Power Apparatus and Systems, July 1981.
2. R. E. McCotter, H. A. Smolleck, S. J. Ranade, W. H. Kersting, "An Investigation of the Fundamental Frequency Impedance of a Single-Phase Distribution Lateral," presented at the 1985 IEEE-PES Summer Power Meeting, IEEE Transactions on Power Delivery, Vol. PWRD- 1, No. 1, January 1986, pp. 232-238.
3. S. J. Ranade, "Characteristics and Impacts of Utility Interactive Photovoltaic Systems on the NMSU distribution feeder," presented at the 1985 IEEE-PES summer meeting, IEEE Transactions on Power Delivery, Vol. PWRD-1, No. 2, March 1986, pp. 121-128.
4. S. J. Ranade, "An automated data-acquisition and processing system using personal computers for an undergraduate electric-machinery laboratory," IEEE Transactions on Power Systems, Vol. 4, No. 1, pp. 361-367, Feb. 1989.
5. S. J. Ranade, N. R. Prasad, S. Omick, L. F. Kazda, "A study of Islanding in utility-connected residential photovoltaic systems Part I Models and Methods," IEEE Transactions on Energy Conversion, Vol. 4, No. 3, pp. 436-445, Sept. 1989.
6. S. J. Ranade, N. R. Prasad, S. Omick, L. F. Kazda, "A study of Islanding in utility-connected residential photovoltaic systems Part II Case Studies," IEEE Transactions on Energy Conversion, Vol. 4, No. 3, pp. 446-452, Feb. 1989.
7. S. J. Ranade, J. Tester, J. Singh, N. Gaume, G. R. Nail, "A Power System Design Projects Class,"



8. 1990 PES Winter meeting, IEEE Transactions on Power Systems Volume: 6, Issue: 1 , pp411-419, 1991,
9. H. A. Smolleck, S. J. Ranade, B. Kindel, D. Mallone, L. R. Kirk, "Translation of large data-bases for microcomputer-based application software: Methodology and Case study," IEEE Computer Applications in Power, Vol. 2, No. 3, Jun. 1989.
10. H. A. Smolleck, S. J. Ranade, N. R. Prasad, R. O. Velasco, "Effect of Pulsed Power Loads on the Electric Power Grid," Paper 90 SM 401-0-PWRD, IEEE Transactions on Power Delivery, Volume:6, Issue:4, Oct.1991, pp. 1629 –1640
11. “ Modeling and Simulation of Harmonic Propagation in Electric Power Systems Part I”, IEEE Transactions on Power Delivery, Volume: 11 Issue: 1, Jan. 1996 pp. 452 -465, Paper Coauthored as Chairman IEEE Task Force on Harmonics Modeling and Simulation
12. “ Modeling and Simulation of Harmonic Propagation in Electric Power Systems Part II”, IEEE Transactions on Power Delivery, Volume: 11 Issue: 1, Jan. 1996 pp. 466 -472, Paper Coauthored as Chairman IEEE Task Force on Harmonics Modeling and Simulation
13. " Harmonics Test Systems", IEEE Transactions on Power Delivery, , Volume: 14 Issue: 2 , April 1999, pp.579 -587, Task Force Paper
14. S. J. Ranade, H. Puente, J. Jordan, A. Dorris, “Image Processing Technology to Incoming
15. Cable Inspection”(Invited), T&D Magazine, 1995
16. Grady, Liu, Marz, Ranade Ribeiro and Xu “Impact of Aggregate Linear Load Modelng on Harmonic Analysis A Comparison of Common Practice and Analytical Models” IEEE Transactions on Power Delivery, Vol.18, NO. 2, April 2003, pp.625-630
17. IEEE Task Force on Harmonics Modeling and Simulation, “Modeling devices with nonlinear voltage-current characteristics for harmonic studies” IEEE Transactions on Power Delivery Volume 19 Issue 4, 2004, Pages 1802-1811
18. J. Mitra, S. B. Patra, S. J. Ranade and M. R. Vallem, “Reliability-Specified Generation and Distribution Expansion in Microgrid Architectures,” WSEAS Transactions on Power Systems, vol. 1, no. 8, pp. 1446–1453, Aug 2006.
19. IEEE Task Force on Harmonics Modeling and Simulation, “Interharmonics: Theory and Modeling” IEEE Transactions on Power Delivery, Vol. 22, No. 4, October 2007
20. Wei Zhang, Ye Ma, Wenxin Liu, and Satish Ranade, "Distributed Optimal Active Power Dispatch under Constraints for Smart Grids," IEEE Transactions on Industrial Electronics, June 2017, Volume: 64, Issue:6, pp. 5084-5094, DOI 10.1109/TIE.2016.2617821

#### D. Conference and Other:

1. S. J. Ranade, "Generation System Expansion Planning Program". In Metering for Innovative Electric Rates, final report to the Florida PSC, S. V. Berg, PI.
2. S. J. Ranade, "PV Utility Interface Work at the SWRES", presented at the Southeast Utilities Research Group Meeting, Atlanta, GA, May 1983.
3. S. J. Ranade, K. F. Coffee, "An Application of the Min-Max Dual to the Optimal Power Flow Problems," Midwest Power Symposium, Houghton, October 1985, Proceedings of the Seventeenth MPS, 1985, pp. II-A-1 - II-A-13.

4. M. A. Amin, J. E. Steelman, S. J. Ranade, "Adaptive Harmonic Cancellation," presented at the IEEE Region V Conference, Lafayette, LA, May 1986.
5. M. A. Amin, J. E. Steelman, S. J. Ranade, "Adaptive Harmonic Cancellation: SPICE Model Results", presented at the IEEE Industry Applications Society Annual Meeting, Denver, Colorado, October 1986.
6. N. R. Prasad, S. J. Ranade, E. Dietrich, R. T. Hartley, "A speculative framework for the application of AI technologies to the control of large-scale, interconnected power-systems," Proc. Symposium on Expert System Application to Power Systems, Stockholm, 1988.
7. S. J. Ranade, N. R. Prasad, S. Omick, "Self-excitation in Single Line-commutated Inverters in Utility-Connected Residential Photovoltaic Applications Part I - Modeling and Analysis," Proc. 20th North American Power Symposium, Purdue University, Sept. 1988.
8. S. J. Ranade, N. R. Prasad, S. Omick, "Self-excitation in Single Line-commutated Inverters in Utility-Connected Residential Photovoltaic Applications Part II - Comparison with Field Tests," Proc. 20th North American Power Symposium, Purdue University, Sept. 1988.
9. N. R. Prasad, S. J. Ranade, E. Dietrich, R. T. Hartley, "Speculation on the Nature of Knowledge- Based System in a Power Systems Environment," Proc. 19th North American Power Symposium, Edmonton, October 1987, pp. 323-332.
10. R. D. Smith, S. J. Ranade, N. R. Prasad, "Generalized Fault Analysis," Proc. 19th North American Power Symposium, Edmonton, October 1987, pp. 323-332
11. S. J. Ranade, M. Uraguchi, P. Tan, "An Expert System Prototype for Secure Operation Guidelines For Electric Power System-Line-Overloads," Fifth IEEE International Symposium on Intelligent Control, Philadelphia, PA, September 1990. S. J. Ranade, "Self-excitation in Induction Generators," to be IASTED International Conference, Tarnan, March 4-7, 1991. S. J. Ranade, M.
12. Uraguchi, P. Tan "Further Development of An Expert System Prototype for Secure Operation Guidelines For Electric Power System-Line-Overloads," Second ESAP, Tokyo, May 1991. S. J. Ranade., J. S. Kanetkar, M. Uraguchi, P. Tan, "Experience with a Practical Expert System for Secure Operation Guidelines For Electric Power System-Line-Overloads," Fourth ESAP, Melbourne, Jan. 1992.
13. S. J. Ranade, H. Puente, J. Jordan, H. McCarty, " Feasibility of Applying Image Processing Technology to Incoming cable Inspection"(Invited), Western Undergrnd Conference, Phoenix, Az, 1992
14. W. Gray, S.J. Ranade, H. Puente, "Considerations in Surge Arrester Application to URD Cable", American Power Conference, Chicago, 1994
15. J. S. Kanetkar, S. J. Ranade, " Compact Representation of Power System Security", NAPS, Reno, 1994
16. J. S. Kanetkar, S.J. Ranade "Neurocontroller for AGC in MATLAB", MATLAB user's conference, 1995
17. Kidd, D., S. J. Ranade, K. Nix, " Transmission Failures-- an exercise in serendipity" Texas A&M Protective Relay Conference
18. Harrell, D., S. J. Ranade, D. Osborn, " An Expert System for LV/MV Filter Design", Proc. Third IASTED International Conference on Power and Energy Systems, Las Vegas, Nov. 1999.

19. Liao, C., S. J. Ranade, Ellis, A., " Disturbance Detection and Data Compression using Wavelets", Proc. North American Power Symposium, San Luis Obispo, Oct. 1999.
20. Ranade, S.J., Ellis, A., Mechenbier, J. " Identification of Load Models from Voltage Change Tests", Proc. IEEE T&D Conference and Exposition, Atlanta, Ga., October 2001
21. L. Jentgen, R. Riddle, C. Conrad, S. Ranade, W. Grayman, E. Von Sacken , B. Dayyaani, K. Stone, "New Software Tools for Real-Time Energy Optimization for Water Utilities", IMTECH conference, Denver, June 2002
22. L. Jentgen, R. Riddle, C. Conrad, S. Ranade, W. Grayman, E. Von Sacken , B. Dayyaani, K. Stone, "Energy and Water Quality Management Systems Promise Significant Energy and Water Quality Benefits", World of Water Conference, Las Vegas, Dec. 2001
23. "Directed Mentoring: A program of Industry-University Collaboration to Revitalize Electric Power Engineering Education", with H.A. Smolleck, Proc. ASEE 2003 annual conference, Nashville, TN, June 2003
24. "Directed Mentoring Program and Power Laboratory" with H.A. Smolleck, and J. Mitra Proc. ASEE 2003 annual conference, Nashville, TN, June 2004
25. "Extending Transient Loadability of Distributed Energy Resources using Electro-chemical Capacitors", Electric Energy Storage and Applications (EESAT), San Francisco, CA, March 2002
26. "Extending Transient Loadability of Distributed Energy Resources using Electro-chemical Capacitors", Electric Energy Storage and Applications (EESAT), San Francisco, CA, March 2003
27. Ranade, Ellis, Mechenbier "The development of power system load models from measurement", Proc. IEEE PES Transmission and Distribution Conference and Exposition, October 2001.
28. J. Mechenbier, Ellis, Curtner, Ranade, "Design of An Under Voltage Load Shedding Scheme", Proc. IEEE Power Engineering Society General Meeting, Denver, June 2004
29. S. J. Ranade, R. Kolluru, J. Mitra, "Identification of chains of events leading to catastrophic failures of power systems," International Symposium on Circuits and Systems, Kobe, Japan, May 23-26, 2005.
30. Joydeep Mitra, Shashi B. Patra, Satish J. Ranade, "Microgrid Architecture: A Reliability Constrained Approach", IEEE Power Engineering Society General Meeting June 12-16 2005, San Francisco.
31. Joydeep Mitra, Shashi B. Patra, Satish J. Ranade, "A Dynamic Programming Based Approach for Developing Optimal Microgrid Architectures", PSCC 2005, June 2005, Leige, Belgium
32. Deepak R. Sagi, Satish J. Ranade and Abraham Ellis, " Physically Based Load Composition Estimation", Proceedings of the 37th annual North American Power Symposium, Ames, IA, Oct. 2005.
33. S. A. Al-Askari , S. J. Ranade, J. Mitra, "Optimal Allocation of Shunt Capacitors Placed in a Microgrid Operating in the Islanded Mode," Proceedings of the 37th annual North American Power Symposium, Ames, IA, Oct 2005.
34. J. Mitra, M. R. Vallem, "A Probabilistic Search Method for Optimal Resource Deployment in a Microgrid," 9th International Conference on Probabilistic Methods Applied to Power Systems, Stockholm, Sweden, June 2006.

35. J. Mitra, S. B. Patra and S. J. Ranade, "Reliability Stipulated Microgrid Architecture Using Particle Swarm Optimization," 9th International Conference on Probabilistic Methods Applied to Power Systems, Stockholm, Sweden, June 2006.
36. J. Mitra, S. J. Ranade, "A Self-Supporting Microgrid Architecture Achievable with Today's Technology," Panel Paper to be presented at the Transmission and Distribution Conference and Exposition, Dallas, TX, May 2006.
37. S. Ranade, D. Sagi, A. Ellis, "Identifying Load Inventory from Measurements", to be presented at the IEEE-PES Transmission and Distribution Conference and Exposition, Dallas, TX, May 2006.
38. S. Ranade, "Load Understanding and Model Development" to be presented at the IEEE-PES Transmission and Distribution Conference and Exposition, Dallas, TX, May 2006.
39. S. A. Al-Askari, S. J. Ranade, J. Mitra "Designing a Sufficient Reactive Power Supply Scheme to Multi-Islands in a Microgrid," Proc. IEEE-PES Annual General Meeting, Montreal, Canada, June 2006.
40. Satish J. Ranade, Deepak R. Sagi, Ravindra Mulpuri, Raghu Surabhi, Joydeep Mitra "Likelihood of Islanding in Distribution Feeders with Photovoltaic Generation", Proc. IEEE-PES Annual General Meeting, Tampa, FL, June 2007.
41. C. A. Duque, M. V. Ribeiro, S. Ranade, P. F. Ribeiro, Identification of Non-Linear Load Using the Time-Varying Harmonic Transition Principle," Paper 09GM0624, to be presented at the IEEE PES 2009 General Meeting, Calgary, Canada, July 2009.
42. Jain, P., Ranade " Capacity Discovery in Customer-driven Microgrids", Proc. 2009 North American Power Symposium, Mississippi State University, Oct. 2009
43. American Power Symposium, Mississippi State University, Oct. 2009
44. Jain, P., Ranade, S.J., Srivastav, S., " Island Identification in Customr-driven Microgrids", Presented in poster session for the IEEE Transmission and Distribution Conference and Exposition, New Orleans, LA, April 2010.
45. 46. Gampa, K., S. J. Ranade, Palak Jain, M. Balakrishnan, and Sandeep Yemewar "Performance Analysis of Capacity Discovery Algorithm on Hardware Platform", Proc. 2010 North American Power Symposium, Arlington, TX, Oct. 2010
46. Dahal, O.P.; Brahma, S.M.; Ranade, S.J.; Malahowski, R.J.; , "Investigation of various options to avoid false tripping of a primary distribution feeder: Part I - modeling and analysis," North American Power Symposium (NAPS), 2010 , vol., no., pp.1-6, 26-28 Sept. 2010
47. Al-Nouman, J.A.; Ranade, S.J.; , "A novel technique to enhance wind power generation in moderate wind speed," Energytech, 2011 IEEE , vol., no., pp.1-6, 25-26 May 2011
48. Dahal, O.P.; Brahma, S.M.; Ranade, S.J.; Malahowski, R.J.; , "Investigation of various options to avoid false tripping of a primary distribution feeder: Part II - Solution techniques," Power and Energy Society General Meeting, 2011 IEEE , vol., no., pp.1-8, 24-29 July 2011
49. Brahma, S.M.; Chaudhary, M.; Ranade, S.J.; , "Some findings about equivalencing windfarms with Type 1 and Type 2 induction generators," North American Power Symposium (NAPS),

50. Gary W. Chang, Satish Ranade; Neville R. Watson; Math H. J. Bollen "Monitoring issues and analysis techniques-smart grid aspect of power quality" IEEE 15th International Conference on Harmonics and Quality of Power, 2012
51. H. J. Su, G. W. Chang, S. Ranade, H. J. Lu "Modeling and simulation of an ac microgrid for harmonics study "IEEE 15th International Conference on Harmonics and Quality of Power, 2012
52. Malati Chaudhary, Sukumar Brahma, and Satish Ranade, "Controlling and Interpreting the Short Circuit Behavior of Type 4 Wind Turbine Generator" Proc. 2014 IEEE Transmission and Distribution Conference & Exposition, April 2014, Chicago, IL.
53. Sukumar Brahma, Malati Chaudhary, and Satish Ranade, Conservation over Frequency Transformation in Doubly Fed Asynchronous Generator, Proc. IEEE PES General Meeting 2014, Washington, DC, July 2014.
54. Nadipuram R. Prasad, Satish J. Ranade, Nguyen Huu Phuc, "Low-head hydropower energy resource harvesting: design and manufacturing of the (HyPER) harvester", SCIENCE & TECHNOLOGY DEVELOPMENT, Vol.18, No.K6 - 2015,pp.132-142
55. Nadipuram R. Prasad, Satish J. Ranade, Nguyen Huu Phuc, "Low-head hydropower energy resource harvesting: analysis and design of a Venturi turbine", SCIENCE & TECHNOLOGY DEVELOPMENT, Vol.18, No.K6 - 2015,pp. 102-110
56. Michael Brown, Milan Biswal, Sukumar Brahma, Satish J Ranade, and Huiping Cao, "Characterizing and Quantifying Noise in PMU data," Proc. IEEE PES General Meeting 2016, Boston.
57. Javier Alvidrez, Steve Bukowski, Satish Ranade, Cesar Silva-Monroy, Sukumar Brahma, Abraham Ellis," An Analytical Model of a Single Phase DQ-Controlled Inverter for Power System Short Circuit Calculations", North American Power Symposium, Denver, Sept. 2016
58. Steven Bukowski, Jose Tabarez, Satish J. Ranade, Palak Jain "Decentralized Scheduling of Distributed Resources Using Lagrangian Relaxation", North American Power Symposium, Denver, Sept. 2016
59. Jose Tabarez, Satish J. Ranade, "A Proposed Energy Storage Controller for Mitigating Impact of Wind Farms on AGC", North American Power Symposium, Denver, Sept. 2016
60. Elkhatib, M., Ellis, A., Biswal, M., Brahma, S. and Ranade, S (2016) Protection of Renewable-dominated Microgrids: Challenges and Potential Solutions. Technical Report (Sandia National Laboratories), Albuquerque, November 2016, 1-85
61. Ferdinando Fioretto, William Yeoh, Enrico Pontelli, Ye Ma, Satishkumar J. Ranade: "A Distributed Constraint Optimization (DCOP) Approach to the Economic Dispatch with Demand Response" AAMAS 2017: 999-1007
62. Y. Ma, S. J. Ranade, A. Nadella, N. Pragallapati and W. Liu, "Stochastic Distributed Energy Resource Management," 2017 7th International Conference on Power Systems (ICPS), Pune, 2017, pp. 1-7
63. Javier Hernandez-Alvidrez, Adam Summers, Nataraj Pragallapati, Matthew J. Reno, Satish Ranade, Jay Johnson, Sukumar Brahma, and Jimmy Quiroz, "PV-Inverter Dynamic Model Validation and Comparison Under Fault Scenarios Using a Power Hardware-in-the-Loop Testbed," 2018 IEEE 7th World Conference on Photovoltaic Energy Conversion (WCPEC)

- (A Joint Conference of 45th IEEE PVSC, 28th PVSEC & 34th EU PVSEC), Waikoloa Village, HI, USA, 2018, pp. 1412-1417. doi: 10.1109/PVSC.2018.8547488
64. N. Pragallapati, S. J. Ranade, M. A. Moonem and S. Atcitty, "Distributed Power Processing based Cell-level Battery Energy Storage System," 2018 9th IEEE International Symposium on Power Electronics for Distributed Generation Systems (PEDG), Charlotte, NC, 2018, pp. 1-7. doi: 10.1109/PEDG.2018.8447709
  65. N. Pragallapati, S. J. Ranade, M. A. Moonem and S. Atcitty, "Secondary Voltage and Droop Control Strategy of Parallel Converters based Cell Level Battery System," 2018 4th IEEE International Conference on Recent Trends on Electronics, Information & Communication Technology (RTEICT), Bengaluru, 2018.
  66. N. Pragallapati, S. J. Ranade, M. A. Moonem and S. Atcitty "Distributed TABC based Bi-Directional Converter for Cell/Sub-Modular Level Battery Energy Storage System" presented at TEPC-2019, College Station, TX, February 2019
  67. N. Pragallapati and S. J. Ranade, "Cascaded H-Bridge MLI based Grid Connected Cell Level Battery Energy Storage System," 2020 IEEE International Conference on Power, control and Computing Technologies (ICPC2T), Raipur, India, Jan. 2020. [presented]
  68. S. Pati, S. J. Ranade, O. Lavrova "Methodologies for Customer Baseline Load Estimation and their Implications", TPEC 2021, February 4-5, 2021 Texas A&M University, College Station, TX
  69. N. Pragallapati, S. J. Ranade and O. Lavrova, "Cyber Physical Implementation of Improved Distributed Secondary Control of DC Microgrid," 2021 IEEE International Conference on Power Electronics and Energy (ICPEE), Bhubaneswar, India 2021.
  70. Biswal, Milan, Pati, Shubhasmita, Ranade, Satish, Lavrova, Olga, Reno, Matthew. (2022). Exploring the use of Shapelets in Traveling Wave based Fault Detection in Distribution Systems. 10.1109/TPEC54980.2022.9750728.

### **PROFESSIONAL AND HONOR SOCIETIES**

Life Fellow, Institute of Electrical and Electronics Engineers  
Power Engineering  
Industry Applications  
Industrial Electronics  
Power Electronics  
Control Systems  
Eta Kappa Nu  
Tau Beta Pi

### **SERVICE**

NMSU

Senator, NMSU Faculty Senate  
Klipsch School Promotion and Tenure Committee, Chairman 1997-2010  
Captain, Building the Vision – Efficiency and Effectiveness (NMSU Strategic Plan)  
Undergraduate Studies Committee  
Counselor: IEEE Student Branch 1987 -  
SHPE

EUMP Student Organization  
1995- Indian Student  
Association  
Cricket Club  
Past Member Graduate Committee  
Past Vice-Chair ECE Curriculum Review

Institute of Electrical and Electronics Engineers – Power and Energy Society

Chairman, Career Promotion and Lifelong Learning Subcommittee

Chairman, Vice-Chair, Secretary, Transmission and Distribution Committee 2008

Technical Program Chair, IEEE PES T&D Conference and Exposition 2005-2006, Dallas, TX,  
May 2006

Technical Committee Program Coordinator, IEEE PES T&D Committee, 2005-2007

Past Chairman, Renewable Energy Subcommittee, IEEE PES T&D Committee 2007-2008

Chairman Task, Force on Harmonics Modeling and Simulation 1991-96

City of Las Cruces

Ad-Hoc Committee to support the City of Las Cruces' El Paso Electric Franchise Negotiating Team  
Review Committee to support the City of Las Cruces Third Party Solar RFP