**34 Years in practice**

# Srijib Mukherjee, Ph.D., P.E.

**Education:**

MBA, Duke University, The Fuqua School of Business, NC, 2004

PhD, University of Miami, Coral Gables, FL, 1994

MSEE, University of Miami, Coral Gables, FL, 1991

BE, Manipal Institute of Tech, Karnataka, India, 1989

**National Licenses:**

Professional Engineer (P.E.)

NC #26216
CA #16264

NERC Certified System Operator, #N19981282

**Professional memberships:**

Accreditation Board of Engineering Technology (ABET), Program Evaluator, 2012-Present

University of Miami, College of Engineering, Industry Advisory Board, 2012-2017

NC State University, FREEDM Center, Education Advisory Board, 2010-2014

Duke University, Professional Member, Engineering World Health, 2008-Present

Duke University, Fuqua Alumni Council Member, 2004-2009

Duke University, Alumni Admission Advisory Committee, 2003-2017

IEEE Eastern NC Industrial Applications Society, Chair, 2001-2002

IEEE Senior Member, 1999

NSPE Member, 2000

Tau Beta Pi, Life Member, 1989

Eta Kappa Nu/HKN, Life Member, 1990

Dr Mukherjee comes with 34 years of research, engineering, academic and management experience in Power Systems Operations, Power Generation Engineering, Transmission Planning, Energy Markets, Electrical Grid Resiliency and Distributed Generation of Power Systems. Srijib has an MBA in Finance from Duke University, Ph.D. and MS in Electrical Engineering from the University of Miami and a B.E. (Bachelor of Engineering, Electrical Power Engineering) from The Manipal Institute of Technology. He has a Joint Faculty, Professor appointment with the University of Tennessee's and Oak Ridge National Laboratory's Bredesen Center. Srijib' s research and engineering interests are in the technologies surrounding autonomous cars, electric charging infrastructure and energy storage. His experience spans 14 years with US electric utilities (CP&L/Duke Energy, Nevada Power/NV Energy, and FP&L/NextEra Energy), 13 years with various technical and management energy consulting firms (Quanta Technology/Quanta Services, Pike Electric and Mott MacDonald), 10 years as an Adjunct and Research Faculty member at The University of North Carolina, Charlotte and The University of Tennessee, Bredesen Center and 4 years with Government Agencies (NOAA and ORNL). He has published over 24 peer reviewed, refereed research papers in various journals and conferences, 9 DOE Technical Reports at The Office of Science and Technical Information (OSTI) and has 2 patents and 1 invention disclosure under patent application. He is also a veteran Program Evaluator (PEV) for the Accreditation Board of Engineering Technology (ABET) and is an Alternate Board Member of the IEEE Committee on Engineering Accreditation Activities (IEEE CEAA). Additionally, he is licensed to practice engineering as a Professional Engineer (P.E.) in the States of NC, NV and CA and licensed to operate the US Grid as a NERC Certified System Operator. Srijib has mentored advised and chaired 10 Ph.D. and master's student's thesis committees in Energy Science and Power Systems research. He volunteers his time to tutor high school math (Algebra, Geometry and AP Calculus) to low-income students in his school district. He is a parent with two college age children (one in law school and the other a cadet for the US Air Force). He enjoys gardening, tennis, and non-fiction books.

| | |
|---|---|
| **Oak Ridge National Laboratory (ORNL) Accomplishments:**<br>Dec 2019 – Present: | 1. Advanced Grid Modelling Protection and Control<br>2. Adaptive Model Driven Protective Relaying for Microgrids and T&D<br>3. AI/ML based Adaptive Protection ORNL/ NSF CURENT Center, Principal Investigator (PI)<br>4. NAERM Real Time Situational Awareness<br>5. DCEI Black start Protective Relaying<br>6. WPTO Hydro Fleet Intelligence – Use Case 1: PI<br>7. Digital Twin Hydro Power System Domain Expert<br>8. DOE Grid of the Future contributing author<br>9. Inter-lab DOE Resilience Near Term Resilience: PI<br>10. BECCS Biomass Carbon Sequestration – Feedstock and Logistic Options (Energy Market Modelling)<br>11. WPTO NC-5 Hydro Flexible Operations Roadmap – PI<br>12. WPTO PSH-Techno Economic Studies – Co PI<br>13. Two journal papers in 2020 and 2021<br>14. Two conference papers in 2020 and 2021<br>15. One invention disclosure under Patent Application<br>16. Ten Technical Presentations to Outside Organizations<br>17. Three DOE OSTI Reports as Lead Author<br>18. Three Journal Paper Abstracts<br>19. ABET PEV to Rockhurst University<br>20. Thesis Chair for one Ph.D. student<br>21. 1 Patent on Universal Interface Method for Pinouts<br>22. 1 Invention Disclosure on Signature Fault Patterns |

| Employment history | |
|---|---|
| 2019 - Present | Sr. R&D Scientist, Oak Ridge National Laboratory |
| 2020 – Present | Joint Faculty Professor, University of Tennessee, Bredesen Ctr. |
| 2012 – 2019 | Adjunct Faculty, UNCC, Systems Engineering |
| 2018 – 2019 | Principal Engineer, Mott MacDonald, Power Delivery |
| 2014 – 2018 | Principal Engineer, Pike Electric Corporation, Grid Modernization |
| 2007 – 2014 | Director, Quanta Technology, Transmission Planning |
| 1999 – 2007 | Lead Engineer, Carolina Power & Light/Duke Energy |
| 1994 - 1999 | Operations Engineer, NV Energy/Sierra Pacific Resources |
| 1991 – 1992 | Summer Intern, NOAA Miami, FL |
| 1990 - 1991 | Summer Intern, Florida Power & Light Company |

**Google Scholar Citations:**
https://scholar.google.com/citations?user=PHVZNr0AAAAJ

**Mendeley SCOPUS:**

https://www.mendeley.com/profiles/srijib-mukherjee/?viewAsOther=true

**ORCID publications**

https://orcid.org/my-orcid

**Publons publications**
https://publons.com/researcher/3460996/srijib-mukherjee/

**ORNL Web Page**
https://www.ornl.gov/staff-profile/srijib-k-mukherjee

**SciProfile MDPI Web Page**
https://sciprofiles.com/profile/Srijib

**Relevant Grants (2021 – 2022):**

- DOE Office of Fossil Energy, Nuclear Energy and Energy Efficiency and Renewable Energy – Inter-lab, Near Term Reliability and Resilience, Lead Principal Investigator, $7M
- DOE Water Power Technology Office – Inter-lab, NC-5 Flexible Operations, Lead Principal Investigator, $600K
- DOE Water Power Technology Office – Hydro Fleet Intelligence, Use Case 1: Dispatch Variability, Principal Investigator, $500K
- DOE Water Power Technology Office – Pumped Storage Hydro Techno Economic Studies and Tool, ORNL Co – PI, $100K

**Patent (Co-Inventor):**

Patent Application: 63127743. The invention was under a contract with an agency of the United States Government. The name of the US Government agency and Government contract number is: DE-AC05-00OR22725

**National Licenses:**

1. Professional Engineer (P.E., Electrical) licensed in North Carolina
2. Professional Engineer (P.E. Electrical) licensed in California
3. Fundamentals Engineer (F.E. Electrical) licensed in Nevada
4. NERC Certified System Operator Licensed, North American Electric Reliability Corporation

## Chair, Advisor, Mentor: Thesis committees (past 25 years)

1. Advisor: Haoyuan Sun, University of Tennessee, Electric Engineering, Masters Thesis Committee, May 2023
2. Mentor: Crist R. Reid, Senior Thesis, Arizona State University, Fulton School of Engineering, May 2021
3. Advisor: Max Ferrari, ORNL, Power Division, University of Tennessee, Student, Ph.D., Thesis Com., May 2023
4. Advisor: Adeniyi (Abi) Abeniyi, ORNL, Reactor and Nuclear Division, Ph.D., Thesis Committee, May 2023
5. Advisor: Asha Shibu, ORNL, Power Division, University of Tennessee, Ph.D., Thesis Committee, May 2022
6. Mentor: Sambidh Timilisiana, Master of Management Science, Duke University mentor, May 2020
7. Mentor: Matt Gosnell, Engineer, NC State University, Master's Thesis committee, May 2021
8. Mentor: Willis Edmondson, NC State University, FREEDM Center, Master's mentor, May 2015
9. Advisor: John Allemeier, Energy Science, 2020 UTK Bredesen Center Ph.D., Thesis Com, May 2023
10. Advisor: Duncan Clark, Systems Engineering/MBA mentor, UNCC, 2015
11. Mentor: Will Pike, Senior Thesis, University of Virginia, 2017
12. Mentor: Douglas Harshbarger, MS Thesis, Electrical Engineering, UNLV, May 1996

## Accreditation Board of Engineering Technology ABET Program Evaluator History:

a. Washington University in St. Louis, IEEE EAC, Electrical Engineering
b. Florida Institute of Technology, Melbourne, FL, IEEE EAC, Electrical Engineering
c. University of South Florida, Tampa, FL, IEEE EAC, Electrical Engineering
d. Wentworth Institute of Technology, Boston, MA, IEEE EAC, Electrical Engineering
e. University of Hail, Hail, Saudi Arabia, IEEE EAC, Electrical Engineering
f. Bethel College, Eden, MN, IEEE EAC, Electrical Engineering
g. Rockhurst University, Kansas City, MO, IEEE EAC, Electrical Engineering

## Awards and Nominations:

- Editorial Board Member, IEEE Power and Energy Magazine, 2023-24
- National Society of Professional Engineer (NSPE), State Delegate Board Member, 2022-24
- Outstanding Faculty Mentor Award, University of Tennessee, May 2022
- Editorial Board, MDPI Energies Journal, 2019 – Pr.
- Alternate Board Member IEEE Committee on Engineering Accreditation Activities, 2018 – Pr.
- Duke University, Fuqua Alumni Council, 2005 - 2010
- NC State University, FREEDM, Education Advisory Board, 2011 -12
- University of Miami, College of Engineering (Electrical Engr.), Advisory Board 2012 - 2018
- Manipal University, Distinguished Alumnus Award, 2014
- Quanta Technology, Service Award for Exceptional Dedication, 2011
- IEEE, Power Engineering Society Outstanding Engineer, 2001
- IEEE, PICA System Restoration contest winner, 1999
- IEEE, Senior Member, nominated in 2001
- NSPE, Member, 2000
- Inducted into Tau Beta Pi Engineering Honor Society (Florida Beta), 1989
- Inducted into Eta Kappa Nu Electrical Engineering Honor Society, 1990
- Undergraduate: First Class with Distinction, Class Rank: 3rd, Electrical Engr. Manipal Institute of Technology, 1989
- Duke of Edinburgh Award Scheme (DEAS) Gold Award, St. Paul's School, Darjeeling, 1983
- Intercollegiate swim team Captain, 1987
- Varsity Track Team Captain, 1983

## Relevant Publications:


[1] **Mukherjee. S.,** O'Reilley C., Park. B., Guler A., King T., Liu. Y., Li. F., Shuai. H., Ojetola S., Schoenwald D., Balash P., Brewer J., Adder J., Lin M., Labarbara K., Price M., Lederer A., Petri M., Folga S., Thimmapuram P., Liu W., Watson J. "Near Term Reliability and Resiliency – Final Report", DOI Identifier: https://doi.org/10.2172/1905237

[2] Sun H., Li. F, Sticht C., **Mukherjee S.,** *"Circular Trajectory Approach for Online Sinusoidal Signal Distortion Monitoring and Visualization"* Early Access Publication, IEEE Transactions on Smart Grid, Digital Object Identifier: 10.1109/TSG.2022.3156364

[3] Zhao J., Li F., **Mukherjee S.,** Stich C., *" Deep Reinforcement Learning based Model-free On-line Dynamic Multi-Microgrid Formation to Enhance Resilience"* IEEE Transactions on Smart Grid, peer reviewed , accepted paper, IEEE PES 2022

[4] **Mukherjee S.,** Marshall M., Smith T., Piesciorovsky E., Snyder I, Sticht C., *"Adaptive Protective Relay Settings – A Vision of the Future"*, 2022 IEEE PES Rural Electric Power Conference, Savannah, GA, accepted refereed paper

[5] **Mukherjee S., "***A Hub-and-Spoke approach to Optimizing Energy Wheeling of Renewable Resources"* 2021 IEEE PES/IAS Power Africa

[6] Matthew Langholtz *, Ingrid Busch, Abishek Kasturi, Michael Hilliard, Joanna McFarlane, Costas Tsouris, **Srijib Mukherjee**, Olufemi Omitaomu, Susan Kotikot, Melissa Ree Allen, Christopher DeRolph, Maggie R. Davis, Esther S. Parish, "*The economic accessibility of CO2 sequestration through bioenergy with carbon capture and sequestration (BECCS) in the US*", LAND Journal, August 2020

[7] Piesciorovsky, E, **Mukherjee S.,** Marshall M., Smith T., "*Universal Interface Method to Identify Unknown Pinouts of Intelligent Electronic Devices for Using Real-Time Simulators with Hardware-in-the-Loop"*, Journal: Electrical Power Systems Research, Aug 2020

[8] V. Koritarov, T. Levin, M. Christian, J. Kwon, C. Milostan, Ploussard M. Padhee. Y. Tian.T. Mosier, S.M.Shafiul Alam R. Bhattarai M. Mohanpurkar G. Stark D. Bain M. Craig B. Hadjerioua P. O'Connor **S. Mukherjee**, Stewart. P. Balducci, M. Weimar – "*Pumped Storage Hydropower Valuation Guidebook: A Cost-Benefit and Decision Analysis Valuation Framework"*, DOE WPTO, September 2020

[9] Edmondson Willis., **Mukherjee S**., "*Adaptive Capacitor Switching for Wind Generation*" IEEE IAS General Meeting, Cincinnati, OH, Jul. 2017

[10] **Mukherjee S.,** Smith T., Marshall M., Sticht C., "*Adaptive Protective Relay Settings A Vision to the Future",* IEEE REPC, August 2021

[11] Edmondson Willis., **Mukherjee S.**, *"Adaptive Capacitor Switching for Wind Generation"* AWEA Wind Power Conference, Houston, TX, May 20-23, 2019

[12] **Mukherjee S.,** *"Applying the Distribution System in Grid Restoration/NERC CIP-014 Risk Assessment"* IEEE Rural Electric Power Conference, May 2015

[13] **Mukherjee S.,** Gentile T., Morrow D., Kruimer B., *"Large scale renewable energy integration. Recent experiences in the USA",* US DOE Office of Scientific and Technical Information, July 2012

[14] **Mukherjee S.,** Casteneda J., Wind Storage Enhanced Transmission Research and Development: Final Project Report, California Energy Commission, 2012

[15] **Mukherjee S.,** Teleke S., Bandaru V. "Frequency and Dynamic Power Balancing in Wind and Solar Generation", IEEE PES, General Meeting, Detroit, Jul. 2011

[16] **Mukherjee S.,** Teleke S., Bandaru V., *"Dynamic Power Balancing in Wind Generation"*, GridTech 2011 proceeding, pp.411, New Delhi, India

[17] **Mukherjee S.,** *Variable Generation Forecasting, NERC IVGTF* 2.1 Report, May 2010

[18] Wojszczyk B., **Mukherjee S.,** Morrow D., "*Massive Deployment of Wind Generation: Dynamics and its Impact on Power Grid Operations"*, IREP 2007, SC, Aug. 2007

[19] **Mukherjee S.,** *"Screening of Load Patterns and Transmission Planning Alternatives using Decision Trees",* IREP 2007, SC, Aug. 2007

[20] **Mukherjee S.,** Wilson P. *"Training Curriculum for System Dispatchers",* T&D Magazine, May 1995

[21] **Mukherjee S.,** Lindquist C., *"A Homomorphic Approach to Digital Companding",* 28th Annual Asilomar Conference on Signals, Systems and Computers. Nov. 1994, Naval Postgraduate School, Monterrey, CA

[22] **Mukherjee S.,** Recio A., *"Voltage Monitoring using Power Flow Applications",* IEEE, Southeastcon, 1992

[23] **Mukherjee S,** Recio A., Douligeris C., *"Optimal power flow by linear programming-based optimization",* IEEE Southeastcon, 1991

[24] **Mukherjee, Srijib Kantha**, Optimal *Power Flow as Applied to Florida Power and Light Company*, University of Miami), Electrical and Computer Engineering Thesis, Otto G. Richter, Theses Catalogues 1991.

**Relevant US DOE Office of Science and Technical Information (DOE OSTI) Publications as Lead or Co-Author of published Technical Reports:**

[1] Near Term Reliability and Resiliency – Final Report, DOI Identifier: https://doi.org/10.2172/1905237

[2] Pumped Storage Hydropower Valuation Guidebook: A Cost-Benefit and Decision Analysis Valuation Framework, DOI Identifier: https://doi.org/10.2172/1770766

[3] Transmission Innovation Symposium: Modernizing the U.S. Electrical Grid, DOI Identifier: https://doi.org/10.2172/1825004

[4] Data and interactive visualization for "The economic accessibility of CO2 sequestration through bioenergy with carbon capture and sequestration (BECCS), DOI Identifier: https://doi.org/10.11578/1647453

[5] The Economic Accessibility of CO2 Sequestration through Bioenergy with Carbon Capture and Storage (BECCS) in the US, DOI Identifier: https://doi.org/10.3390/land9090299

[6] A generic method for interfacing IEDs using low voltage interfaces to real-time simulators with hardware in the loop, DOI Identifier: https://doi.org/10.1016/j.epsr.2021.107431

[7] Technoeconomic Studies for the Banner Mountain Energy Storage Project Valuation Framework Test Case Study, approved for publication by DOE's Hydro Wires, Water Power Technologies Office (WPTO), DOI Identifier to be listed once published

[8] Technoeconomic Studies for the Goldendale Energy Storage Project Valuation Framework Test Case Study, approved for publication by DOE's Hydro Wires, Water Power Technologies Office (WPTO), DOI Identifier to be listed once published

[9] A Hydropower Facility as an Energy Water Signal Processors, approved for publication by DOE's Hydro Wires, Water Power Technologies Office (WPTO), DOI Identifier to be listed once published