

Sowmya Acharya

Research Assistant
Department of ECE, UW-Madison

+1 (919) 744 1679
sacharya2@wisc.edu

Research Interests

My current work focuses on efficient compression of large datasets obtained from phasor measurement units. Optimization of power system operations, and processing of real-time measurement data for analysis and control applications are my primary research interests.

Education

- | | | |
|------------------------|---|---|
| Dec 2019
(expected) | Ph.D. in Electrical Engineering,
Advisor: Dr. C. L. DeMarco
GPA: 3.93/4.00 | University of Wisconsin - Madison, WI |
| Aug 2014 | M.S. in Electrical Engineering,
GPA: 3.90/4.00 | University of Wisconsin - Madison, WI |
| May 2012 | B.Tech. in Electrical Engineering,
GPA: 9.00/10.00 | Veermata Jijabai Technological Institute, India |

Experience

Research

- | | |
|--------------|--|
| 2014–present | Research Assistant University of Wisconsin-Madison
Efficient Compression of PMU data
<i>Developing algorithms for PMU data compression by adapting image and video compression techniques and exploiting the spatial and temporal correlations in the measurements to obtain higher compression ratios.</i> |
| 2012–2014 | Master's Research University of Wisconsin-Madison
Estimation of Topology Errors in Power Systems
<i>Near real-time identification of power line outages through dynamic control of power systems and observer design.</i> |

Teaching

- | | |
|-----------|--|
| 2012–2013 | Teaching Assistant University of Wisconsin-Madison
<i>Math 114: Algebra and Trigonometry (Fall '12, Fall '13)</i>
<i>Math 320: Linear Algebra and Differential Equations (Spring '13)</i> |
|-----------|--|

Professional Experience

- | | |
|-----------------|---|
| Aug–Dec
2018 | Fellow Intern GE Global Research
Cyberattack Detection; Load Model Validation
<i>Evaluated and refined a cyberattack detection algorithm to detect and characterize replay attacks on wide area measurement system (WAMS) data. Contributed to parameter tuning and validation of composite load models for simulating fault-induced delayed voltage recovery.</i> |
|-----------------|---|

Publications

- Conference Sowmya Acharya and C. L. DeMarco, "Enhancing Lossy Compression of PMU Measurements by Data Conditioning", SmartGridComm 2019 [*Accepted*]
- Conference Philip Hart, Sowmya Acharya and Honggang Wang, "Coherency-Based Detection Algorithm for Synchrophasor Cyberattacks", North American Power Symposium (NAPS 2019) [*Accepted*]
- Conference Sowmya Acharya and C. L. DeMarco, "Exploiting Network-induced Correlation for Efficient Compression of PMU Data", North American Power Symposium (NAPS 2018).
- Poster Sowmya Acharya and C. L. DeMarco, "Topology Error Estimation in Power System Dynamic Models", IEEE PES T&D Conference and Exposition 2018.

Relevant Coursework

Advanced Power Systems Analysis, Linear Programming Techniques, Nonlinear Optimization, Optimal Control and Variational Methods, Online Control of Power Systems

Professional Development

- Jun 2014 *Short Course*: Power System Operation in the Age of Smart Grid
- Jun 2013 *Short Course*: Smart Grid Applications of WAMS

Professional Skills

MATLAB/Simulink, PowerWorld, Python, C, C++, L^AT_EX

Leadership Positions

- Member Graduate student representative to the *Committee on Women in the University* at the UW-Madison (2016 – present)
- Member Appointed member of Shared Governance Committee in the Associated Students of Madison (2016 – present)
- Mentor Mentoring undergraduate students in the ECE department of UW-Madison who are recipients of the *Reynolds Scholarship* (2016 – 2017)
- Volunteer Actively helping with various events organized by the Carbone Cancer Center at the UW-Hospital