

## THE NORTH AMERICAN SYNCHROPHASOR INITIATIVE WEBINAR SERIES

Evangelos Farantatos and Professor Anamitra Pal

### Machine Learning Based State Estimation for Transmission and Distribution Grids



**Evangelos Farantatos** received the Diploma in Electrical and Computer Engineering from the National Technical University of Athens, Greece, in 2006 and the M.S. and Ph.D. degrees from the Georgia Institute of Technology, Atlanta, GA, USA, in 2009 and 2012, respectively. He is a Principal Project Manager with the Grid Operations and Planning R&D Group at EPRI, Palo Alto, CA. He is managing and leading the technical work of various R&D projects related to synchrophasor technology, power systems monitoring and control, power systems stability and dynamics, renewable energy resources modeling, grid operation protection and control with high levels of inverter-based resources. He is a Senior Member of IEEE.



**Anamitra Pal** received his Bachelor of Engineering degree in electrical and electronics engineering from Birla Institute of Technology, Mesra, Ranchi (India) in 2008 and his M.S. and Ph.D. degrees in electrical engineering from Virginia Tech, Blacksburg in 2012 and 2014, respectively. He is now an Assistant Professor in the School of Electrical, Computer, and Energy Engineering at Arizona State University. His research interests include data analytics with a special emphasis on time-synchronized measurements, artificial intelligence (AI)-applications in power systems, and critical infrastructure resilience. Dr. Pal has received the 2018 Young CRITIS Award for his valuable contributions to the field of critical infrastructure protection, the 2019 Outstanding IEEE Young Professional Award from the Phoenix Section, and the 2022 NSF CAREER Award.

Fast timescale state estimation for a large power system can be challenging if the sensors producing the measurements are not spread across the system. This is particularly true for performing time-synchronized state estimation for a transmission system that does not have complete phasor measurement unit (PMU) coverage. Similarly, time-synchronized state estimation for distribution networks is challenging because of the sheer size of the system. This talk will first introduce the limitations of conventional supervisory control and data acquisition (SCADA)-based state estimation and of PMU-based linear state estimation and will then describe how the use of machine learning can help overcome the observability challenges associated with performing time-synchronized state estimation in transmission and distribution grids.

To attend this free webinar, please register at <https://www.naspi.org/node/959>.

Please email [naspi@pnnl.gov](mailto:naspi@pnnl.gov) if you would like to be on our email list. For more information about how you can support NASPI and participate in our face-to-face Work Group meetings please visit [www.naspi.org/work-group-meetings](http://www.naspi.org/work-group-meetings).

**Wednesday, August 31, 2022**  
**11:00 a.m. Pacific / 2:00 p.m. Eastern (1 hr.)**  
**Please share with colleagues**