Luigi Vanfretti

Associate Professor, Electrical, Computer, and Systems Engineering at Rensselaer Polytechnic Institute
Troy, NY, US

Modeling and Simulation for Cyber-Physical Power and Energy Systems and Electrified Systems

Biography

Luigi Vanfretti (senior member, IEEE; member, Modelica Association) leads ALSETLab on research in energy systems, electrical power systems, and aircraft electrification. His research includes cyber-physical system (CPS) modeling, simulation, stability, and control in energy systems, power grids, and electrified transportation. In addition, Vanfretti researches development and data analytics in synchrophasor technologies. He is interested in the application of software technologies, signal processing, system identification, and machine learning for design and operation analytics for CPS. Vanfretti has been a professor since 2022 and was previously an associate professor. Vanfretti also earned his master?s and doctoral degrees in electric power engineering from Rensselaer Polytechnic Institute. Vanfretti has held temporary posts in prestigious international institutions, as well. In 2022, he was a visiting professor at both the Laboratoire Ampère of the École Centrale de Lyon and the SuperGrid Institute in Lyon, France. In 2019, he was a visiting faculty at the King Abdullah University of Science and Technology, Thuwal, Saudi Arabia. Prior to emigrating to join RPI as a faculty member, Vanfretti was an assistant professor, tenured associate professor, and docent with the KTH Royal Institute of Technology in Stockholm, Sweden, where he led the SmarTS Lab. He was also employed as Special Advisor in Strategy and Public Affairs and Special Advisor in Strategy and International Collaboration in the Research and Development Department of Statnett SF, the Norwegian transmission system operator. Prior to his employment with Statnett SF, he was a Scientific Advisor, reporting to the Vice President of the Research and Development Division, during 2011 to 2013.

Areas of Expertise

Electric Power Engineering, Modeling and Simulation of Cyber-Physical Systems, Electrified Systems, Power Systems, Power Grid, Real-Time Hardware-in-the-Loop Simulation, CHIL, PHIL, Synchrophasor Measurements, PMU, Synchrophasor Technologies, VTOL, Electrified Aircraft, Electrified Transportation, System Identification

Education

Rensselaer Polytechnic Institute
Ph.D. Electric Power Engineering

Rensselaer Polytechnic Institute
M.Sc Electric Power Engineering

Universidad de San Carlos de Guatemala
Electric Power Engineering Electrical Engineering Degree
