Data-Driven Approaches for Efficient and Resilient operation of Smart Urban Energy Infrastructure

Dr. Masood Parvania, University of Utah

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Abstract:
The human civilization is moving towards urbanization at a pace that is never been experienced before, and many cities face the challenge of working out how to grow without losing the qualities that make them attractive places to live and work. Smart energy infrastructure represents the backbone for future Smart Cities and integrates the information, control, communication, and monitoring technologies to increase the observability and controllability of the urban energy infrastructure and improve the service quality and operational efficiency. This talk presents the experiences of Utah Smart Energy Laboratory at the University of Utah in developing data-driven computational frameworks for smart energy infrastructure that not only reduces energy costs during normal operation, but also enhances the security and resiliency of the energy systems against physical failures and cyber attacks. Our experimental framework integrates PI system for recording real-time data generated in energy systems that is further leveraged to provide inputs to the operation optimization frameworks.

For more information regarding this presentation, please contact Dr. Masood Parvania
masood.parvania@utah.edu
Assistant Professor
Electrical and Computer Engineering
University of Utah