

Power System and Electricity Market Operation and Optimization

Large-scale Power System Optimization and Computation

- Power system operation and planning under uncertainty
- Grid integration of renewables, electric vehicles and energy storage
- GPU-based parallel computing and high performance computing
- Microgrid control

Electricity Market Modeling, Monitoring and Simulation

- Testbed of complex markets modeling
- Optimization and reinforcement-learning based bidding strategy development
- Market design and evaluation
- Energy and price forecasting
- Emerging technology and energy policy evaluation

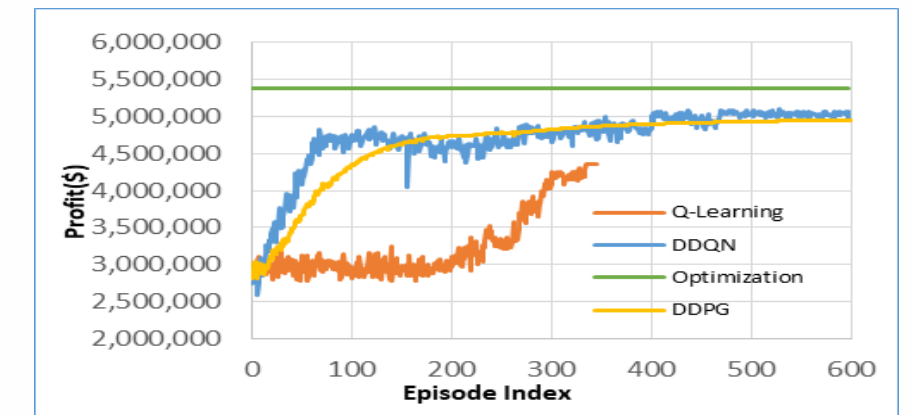
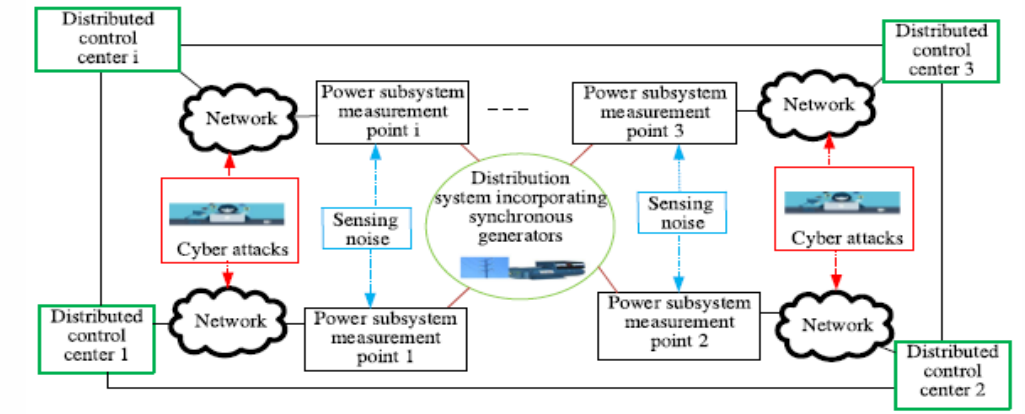
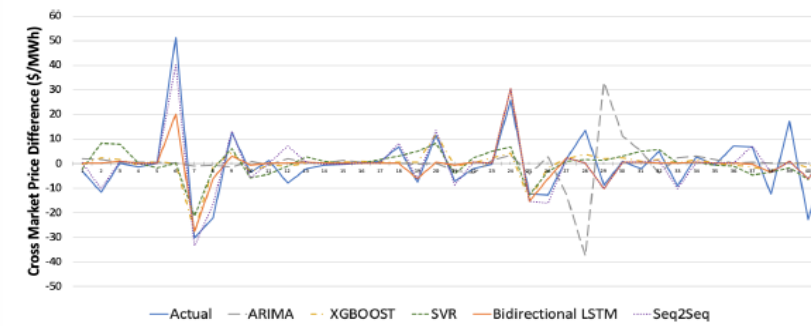
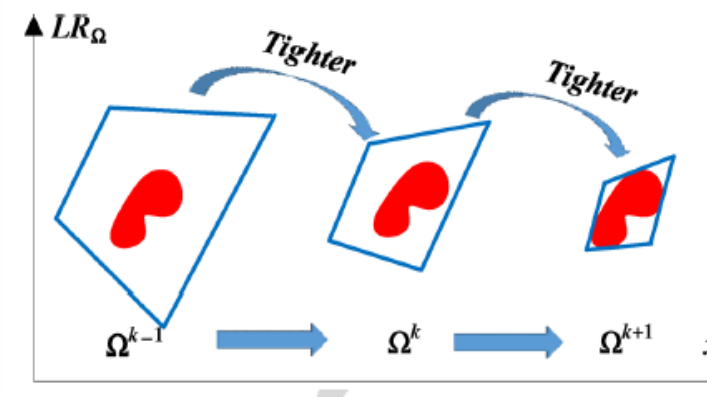
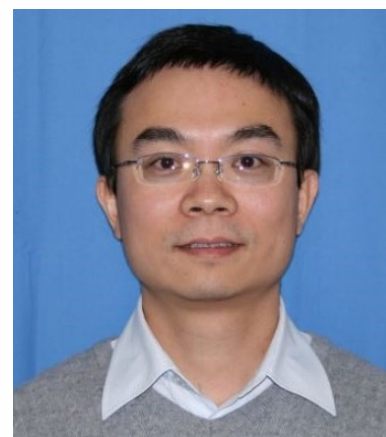
Cyber Physical System Security of Power Systems and Electricity Markets

- State estimation of networked systems
- False data injection attacks and counter measures
- System vulnerability and enhancement

PoC: Rui Bo
Associate Professor
rbo@mst.edu
 573-341-6400

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- DARPA
- NSF
- Department of Energy
- DOD ESTCP
- Industry



Optimization, State Estimation, Energy Forecasting, Reinforcement Learning

Keywords

- Grid, optimization, uncertainty, parallel computing, machine learning, cyber security, energy forecasting, state estimation

Recognitions

- National Science Foundation CAREER Award, 2024
- ISC Distinguished Investigator Award, 2022
- 2021-2022 Dean's Scholar Award
- University of Missouri System President's Award for Career Excellence - Early Career, 2020
- Faculty Excellence Award, 2020
- DARPA Young Faculty Award, 2018