Zhengrong Chen

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PRINCIPAL INTERESTS

My current research interest lies cyber-physical system, power system operation and cybersecurity, renewable energy integration, microgrid control, and machine learning.

ACADEMIC BACKGROUND

Georgia Institute of Technology, Atlanta, GA
Ph.D. in Electrical and Computer Engineering 2020 - present

University of Wisconsin-Milwaukee, Milwaukee, WI
M.Sc. in Electrical Engineering 2018 - 2019

North China Electric Power University, Beijing, China
M.E. in Control theory and control engineering 2017 - 2020
B.E. in Automation 2013 - 2017

AWARD

- Outstanding Graduates of Beijing, China 2020
- Chancellor's Graduate Student Award, UWM 2018
- Outstanding Student Leader at North China Electric Power University 2018
- Outstanding Undergraduates of Beijing, China 2017
- Honorable Mention-Mathematical Modeling of American College Students 2015

PUBLICATIONS

Journal

- **Zhengrong Chen**, Zhaoxi Liu, Lingfeng Wang, "A Modified Model Predictive Control Method for Frequency Regulation of Microgrids under Status Feedback Attacks and Time-delay Attacks", International Journal of Electrical Power and Energy Systems (IJEPES), 2022.

Conference

- **Zhengrong Chen**, Siyao Cai, Zan Yang and A. P. Sakis Meliopoulos, "Robust Optimization Method for Consumer-Oriented Load Management under Real-Time Pricing Integrity Attack", 2022 North American Power Symposium (NAPS).
- Siyao Cai, **Zhengrong Chen**, Zan Yang, and etc., "Modeling and Protection of Real-world PV Integrated Distribution System", 2022 North American Power Symposium (NAPS).

- G. Xiao, B. Zhou, K. Lou and **Z. Chen**, "Value Iteration Based Continuous-time Nonlinear Constrained Optimal Tracking Controller Design", 2020 Chinese Automation Congress (CAC).
- **Zhengrong Chen**, Yang Hu, "Two-stage Photovoltaic Power Forecasting based on Extreme Learning Machine and Improved Pointwise Mutual Information", IEEE APPEEC 2019.

TEACHING

Georgia Tech

- Spring 2021: Teaching Assitant for ECE2020: Digital System Design.
- Fall 2020: Teaching Assitant for ECE2036: Engr Software Design.

TALKS

- Oct 2022: "Robust Optimization Method for Consumer-Oriented Load Management under Real-Time Pricing Integrity Attack", NAPS, University of Utah.
- May 2020: "Power System Reliability, Stability and Cybersecurity", Zhejiang Lab, Hangzhou, China.
- Dec 2019: "Two-stage Photovoltaic Power Forecasting based on Extreme Learning Machine and Improved Pointwise Mutual Information", APPEEC, Macao, China.

SELECTED GRADUATE COURSES

- *Power and Energy System*: Cyber-Physical Security in Electric Energy Systems, Power system control & operation, Power Electronic Circiuts, Power System Protection.
- *Computer Science*: Computer Network Security, Advanced Programming Techniques, Computer Vision, Graduate Algorithms.
- *Statistics and Machine Learning*: Computational Data Analysis, Statistical Machine Learning.

WORKING EXPERIENCE

Zhejiang Lab | *Research Intern* | *Hangzhou* | *China* Apr 2020-Jul 2020

- Designed continuous-time nonlinear constrained **optimal tracking controller** based on **reinforce learning**.
- Modeling large-scale **networked microgrid** including PV, wind turbine, diesel generator, battery, PHEV and controllable loads.
- Built up a close-loop hardware simulation to study cybersecurity issue towards power system.
- Assisted in writing a standard about **industrial security testbed** and industrial internet application.

National power grid global energy Internet Research Institute | *Electrical Engineering Intern* | *Beijing* | *China* Oct 2016-Jan 2017

- Designed a **HVDC transmission substation** with 10KV Power Electronic Transformer.
- Provided modelling design assistance to build smart city when considering the optimization of **energy management**.
- Installed control cabinets and boards and tested the corresponding control code.
- Calculated the optimal power flow in the protection of **DC distribution network** and proposed helpful suggestion on reliability analysis.