**YICHAO WANG**

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Address 5073402189

**EDUCATION**

**UNIVERSITY OF CONNECTICUT** Storrs, CT, US

Ph.D., Electrical Engineering August 2021 - Current

**MINNESOTA STATE UNIVERSITY** Mankato, MN, US

Master of Science, Electrical Engineering **July 2021**

GPA: 3.91/4.00

**XI’AN POLYTECHNIC UNIVERSITY** Xi’an, Shaanxi, China

Bachelor of Science, Electrical Engineering and its Automation **July 2019**

NO.4/144 People in Comprehensive Audit in class of 2019 of Electrical Engineering Major

GPA: 2.80/4.00

**ENGINEERING/RESEARCH EXPERIENCES**

**2021-current** • Conducting research on resilient control for enhancing the security of multi-agent cyber-physical systems.

**2019-2021** • Completed a thesis on the Analysis of Three-phase Rectifier via Three Different Control Methods and Comparison of Switch Power Loss.

•Tested equipment for a Four-port Bidirectional DC-DC Converter for Renewable Energy-Battery-DC Microgrid System under the guidance of Dr. Jianwu Zeng at Minnesota State University.

• Designed a VLSI full adder using Synopsys with gates constructed from CMOS transistors, designed independently.

• Developed and tested System Verilog code in Vivado to implement a Finite State Machine on a Nexys 4 DDR board, Artix FPGA from Xilinx.

• Implemented real-time systems on a B-L475E-IOT01A-STM32L475 board using FreeRTOS and CMSIS RTOS.

• Tested embedded systems using IOPT Petri Nets.

• Built and tested timed automata using Uppaal.

• Sampled data such as pressure, temperature, and humidity using the B-L475E-IOT01A-STM32L475 board, transmitting the results to a cellphone and webpage with adapted example code.

• Scanned available wireless network services using the B-L475E-IOT01A-STM32L475 board, displaying details such as security type, SSID, RSSI, MAC Address, channel, and offset on a UART terminal with adapted example code.

• Worked as a graduate research assistant on the Universal and Scalable Smart Grid Power Converter project, funded by Xcel and supervised by Dr. Vincent Winstead at Minnesota State University. Designed an integrated circuit for sampling voltage and current in a Demo Grid using Altium Designer while conducting research on universal converters and filters.

• Participated in a site visit and training at Zipingpu Dam, Min River, near Dujiangyan, Sichuan Province, China, to observe its electrical system.

**2015-2018** • Completed a thesis on the Design of Arc Suppression Control System for Single-phase Grounding Fault in Resonant Grounding Systems.

• Participated in lab sessions accompanying coursework, focusing on high-voltage and insulation techniques.

• Conducted simulations of three-phase source synchronization to the grid as part of lab assignments.

• Simulated various grid faults and their detection and mitigation during practical lab sessions.

• Engaged in lab-based exercises on motor start-up and speed regulation techniques.

• Designed integrated circuits on the computer, following examples provided during coursework, and fabricated the circuits by soldering components onto boards during hands-on sessions at the Engineering Training Center, Xi’an Polytechnic University.

• Simulated power system protection methods as part of course-related labs.

• Attended site visits and training at Datang Huxian Thermal Power Plants in Xi’an, China to observe electrical system operations.

• Designed a timer on a breadboard using microprocessor chips as part of a senior design project.

• Completed training in the Engineering Machinery Portion at the Engineering Training Center, Xi’an Polytechnic University.

**SKILLS**

**Languages**: Native Speaker in Mandarin (Chinese). Proficient in English.

**Software**: Altium Designer, Matlab, Xilinx Design Tools Vivado, Keil µVision, STM32CubeMx, System WorkBench, PowerWorld Simulator, Microsoft Suite.

**Coding language**: C language, Matlab coding, System Verilog, Assembly, basics of query language and TCTL (timed computation tree logic), Ladder Logic for PLC.

**Other Skills:** Electrical Computer-Aided Design, Producing PCB and doing soldering on it. Testing equipment with DSP.

**WORK EXPERIENCE**

**2021-current** • Teaching assistant and research assistant supervised by Prof. Shan Zuo in University of Connecticut.

**2020-2021** • Teaching assistant in Finite Mathematics and Introductory Calculus and tutor for general math questions for all math majors supervised By Prof. Tyler Metzger in Minnesota State University.

**2019-2020** • Graduate research assistant supervised by Doctor Vincent Winstead in Minnesota State University.

**PUBLICATIONS**

*Journals*

1. Wang, Yichao, Mohamadamin Rajabinezhad, and Shan Zuo. "Secondary Defense Strategies of AC Microgrids Under Polynomially Unbounded FDI Attacks and Communication Link Faults." *IEEE Control Systems Letters* (2024).
2. Zhang, Yi, Yichao Wang, Junbo Zhao, and Shan Zuo. "Resilient data‐driven asymmetric bipartite consensus for nonlinear multi‐agent systems against DoS attacks." *International Journal of Robust and Nonlinear Control* (2024).
3. Zuo, Shan, Yichao Wang, Mohamadamin Rajabinezhad, and Yi Zhang. "Resilient Containment Control of Heterogeneous Multi-Agent Systems Against Unbounded Attacks on Sensors and Actuators." *IEEE Transactions on Control of Network Systems* (2023).
4. Zuo, Shan, Yichao Wang, and Yi Zhang. "Resilient Synchronization of Heterogeneous MAS Against Correlated Sensor Attacks." In *2022 IEEE 61st Conference on Decision and Control (CDC)*, pp. 2276-2282. IEEE, 2022.
5. Zuo, Shan, Yi Zhang, and Yichao Wang. "Adaptive resilient control of ac microgrids under unbounded actuator attacks." *Energies* 15, no. 20 (2022): 7458.

*Conferences*

1. Zuo, Shan, Yichao Wang, and Yi Zhang. "Resilient Synchronization of Heterogeneous MAS Against Correlated Sensor Attacks." In 2022 IEEE 61st Conference on Decision and Control (CDC), pp. 2276-2282. IEEE, 2022.

**PUBLICATIONS (UNDER REVIEW)**

1. Wang, Yichao, Mohamadamin, Rajabinezhad and Shan, Zuo, “Resilient Bipartite Output Containment of Heterogeneous Multi-agent Systems Against Exponentially Unbounded Attacks. (IEEE Transactions on Network Science and Engineering).

**Awards**

1. Conference Participation Award, Graduate School, University of Connecticut, 2024.
2. Summer Predoctoral Fellowship, Department of Electrical and Computer Engineering, University of Connecticut, 2024.