Zhanghe (Nomi) Wang

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Skills

Automation & Controls: RSLogix, RSLinx, Rockwell PLC, Ignition, Ladder Logic
Programming: C++, Java, Python, MATLAB, Verilog, VHDL
CAD & Design: SolidWorks, KiCad, LTSpice
Hardware & Instrumentation: STM32Cube IDE, ESP32, Arduino, Raspberry Pi, Multimeter, Oscilloscope
Web Technologies: HTML, CSS, JavaScript, React, JavaFX
Tools: Git, GitHub, GitLab, Subversion, LaTeX, Overleaf

Experience

Electrical Engineering Intern, Novelis – Davenport, IA May 2025 – Present

- Created plant-first Ignition-Based HMI/SCADA system for real-time PLC data visualization and fault detection
- Learned RSLogix softwares and is able to write simple ladder logic to program Rockwell PLCs
- Authored 20+ technical documentation for trouble shooting, feature creation and Networking connection for the system design project
- Extended Internship to a CO-OP to lead HMI/SCADA system design project

Teaching Assistant, University of Iowa College of Engineering – Iowa City, IA Jan 2025 – Present

- Host weekly discussions and office hours to teach topics parallel to lectures, improved related discussion section's grades by 20
- Host LTSpice simulation workshops to (DC/AC/Op-amp/transient analysis)
- Host weekly office hours and helped over 100 students on homework/lab questions
- Assisted Verilog/VHDL labs and helped with hardware debugging

Research Assistant, Experimental Fluid Dynamics Lab, University of Iowa – Iowa City, IA Jul 2024 – Aug 2025

- Used research method such as particle image velocimetry(PIV) to obtain critical experimental data, implemented data analysis method such as Proper Orthogonal Decomposition(POD) in Matlab to conduct research topics related to Synthetic Jet
- Built a synthetic jet simulation tablet using ESP32, amplifier, and an actuator to present the formation of synthetic jet
- Won the Spring 2025 Engineering Research Open House Best Presentation Award in the Undergrad Mechanical Engineering Division

Projects

Ignition-Based Bag House Dust Collector Modules HMI & Dashboard

- Applied communication network and Automation related knowledge to import PLC tags into Ignition software to check PLC ports status in real-time
- Built HMI(human-machine interface) and dash boards to display dust collector modules' fault status so that users can directly access all ports on the dust collector module to see which part of the module is at fault without having to physically shut down the entire bag house to trouble shoot each dust collector module
- Saved electricians more than 50% effort for debugging hardwares

Synthetic Jet Simulation Tablet

- Developed a system to control a voice coil actuator to vibrate at changing frequencies to generate synthetic jet in a small scale
- Designed a C++ code to output discrete sine wave signal, then used ESP32 microcontroller's DAC(data-to-analog converter) feature to transform the discrete sine wave signal to analog signal in order to drive the voice coil actuator

- Implemented map in the c++ code to direct a rotary encoder to different states to change the actuators frequencies in real time
- Used SolidWorks to build a tablet to store all the hardware components together

Education

University of Iowa – BS in Electrical Engineering Expected 2026
Relevant Coursework: EM Theory, Communication Networks, Electronic Instrumentation, Physics I-IV, Generative AI, Digital Design, Signals and Systems, Probabilities and Statistics, Intro to Software Design (Java), Object-Oriented Programming in C++, Discrete Math, Data Structures, Algorithms

Awards

- University Dean's List (all semesters)
- Electrical & Computer Engineering Excellence Scholarship
- Best Undergraduate Poster, Mechanical Engineering Division — University of Iowa Engineering Open House

Publications

- Z. (Nomi) Wang, D. Butler, S. J. Gerlock, and C. Wang, "Exploring the Wild World of Vortex Shedding in a Hydrodynamics Research Laboratory," *Synthesis: A Digital Journal of Student Science Communication*, 6(2), 2025.
- S. A. Dar, C. N. Eluchie, Z. Wang, P. García-Guillén, and C. Wang, "Experimental Study of Novel Synthetic Jets Induced by Dynamic Deformable Surfaces," in *Proceedings of the AIAA Aviation Forum & ASCEND 2025*, Las Vegas, NV, USA, July 2025, Paper AIAA 2025-3393. doi:10.2514/6.2025-3393