Shao-Ju Wang

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Education

The Pennsylvania State University, University Park, PA, USA
- Bachelor of Science in Electrical Engineering   2019 - 2023
- Bachelor of Science in Computer Science   2019 - 2023
  Minor: Computer Engineering
  Cumulative GPA: 3.66

Research Experience

Research Assistant: Bio-Motion Systems Lab   Aug 2022 – May 2023
- Reconstructed and enhanced the 3D model of fruit flies from stereo images using MATLAB
- Analyzed wing motion before and after wing damage to discover natural strategies for stabilizing damaged aerodynamic systems.
- Improved and optimize code for faster processing and user-friendliness with the parallelized workload.

Relevant Project Experience

On-going Projects

Nordic Semiconductor Hackathon   Jul 2023 – Present
- Create a device that monitors farmland and a web server that processes the sensor data to predict future growth and potential improvement.
- Handle the robot and sensors.
- Expect to finish prototyping by October.

Object Detection Device for Micromobility   Jun 2023 – Present
- Collaborate with Professor Kyusun Choi to port the OneM2M hackathon award-winning project to using Android phones.
- Re-purpose used phones and pack more robust features into smaller casings than the previous version.
- Test software-based and hardware-based hybrid object distance detection mechanisms.

Automatic Image Analysis Algorithm for Metal Deposition   May 2023 – Present
- Use OpenCV on Python to detect the dimensions of a cross-section view of metal deposition under different power and velocity.
- Smooth out noise on the deposition, including the bumps on the edges.

USB Programmable IO   Jul 2023 – Present
- Integrate FPGA and GUI to enable computers to act as digital writers and readers.
- Design a GUI that allows users to program manually or have the ability to import packages such as HDMI protocol.

USB PD to ATX converter   Aug 2023 – Present
- Design a device that converts USB PD protocol via type-c to 24 pin + 8 pin ATX protocol for desktop motherboards

- Use cascading buck converters to step down voltages to various voltages required by the ATX protocol

Accomplished Projects

OneM2M International Hackathon – Team ScootSafe   Apr 2023 – Jun 2023
- Design a device with pedestrian detection, automatic horn, and dash functionality to be installed on micromibility.
- Responsible for the alarm system and electrical wiring.
- Awarded with Best Potential Award.

Engineering for Sustainable World Project - Automatic Plant Watering system   Jan 2023 - May 2023
- Build a watering and cooling system based on Arduino with soil moisture sensors, temperature sensors, and others for an automated hydroponic system.
- Collect data for algorithm improvement.
- Implement sustainable water and power source in the phase 2 design.

Slab Leveling Jig Automation Proof of Concept- Hardware/Software Designer   Jan 2023 – May 2023
EE 403 Capstone Design for Seneca Woodworking
- Develop a user-friendly scalable human-machine interface.
- Integrate microcontroller, stepper motors, and AC power system to control router.
- Use Arduino with C++ to control the speed and precise 2D motion of the router.

Extracurricular and Service Experience

Eta Kappa Nu (Epsilon Chapter) Treasurer   Apr 2022 – May 2023
- Assist members with Electrical and Computer-course related problems by organizing tutoring lessons and connecting students, professors, and other sponsors in the field.
- Manage cash flow and assist other officers in club operations and events.

Eta Kappa Nu (Epsilon Chapter) Tutor   Nov 2021 – May 2023
- Tutor Electrical Engineering and Computer Science undergraduate students for 3 hours weekly.
- Provide consulting services to new students to help them choose classes and academic planning.

Hub Aquarium Volunteer   Feb 2022 – Present
- Help supervisor to fix system faults, such as pump and inflow system.
- Explain the organism and equipment to the visitors.
- Lead and train new volunteers to maintain a clean aquarium.
- Monitor and feed seawater fish in the Hub Aquarium and conduct seawater quality testing.

Student Farm Club – Hydroponics Team   Sep 2021 – May 2023
- Experimented with agricultural practices and promoted healthy eating.
- Planned for more reliable all-year crop production in the Greenhouse.

Honors and Awards

Best Potential Award: 2023 OneM2M International Hackathon – Team ScootSafe	2023
Dean's List (6/8 semesters), Penn State	2020 – 2021
IEEE - Eta Kappa Nu (International Honor Society of Computer and Electrical Engineers)	2021 – Present
Tau Beta Pi (International Honor Society of Engineers)	2021 – Present
Nittany AI Award Finalist: Nittany AI Challenge – Team FungAi	2022
Behrend Honor Program, Penn State (Behrend Campus)	2020 – 2021
College of Engineering Scholarship (STEP)	2021

IEEE Mini Hackathon	2022
College of Engineering Travel Grant, awarded by the Center for Global Engineering Engagement, Penn State University (unable to complete due to COVID-19 pandemic)	2021

Skills

Hardware/Software Languages

C++/ C	Python	MATLAB	Java	VHDL	Verilog
Kotlin	Assembly (MIPS and HC12)				

Software

Visual Studio	Xilinx Vivado	AutoCAD	NI Multism	NI Labview	MPLAB
Android Studio	Blender	ROS 2			

Languages

English (Fluent)	Chinese Mandarin (Native)	Taiwanese (Conversational)	Spanish (Beginner)	Japanese (Beginner)