

MACKLIN A. HALL

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EDUCATION

Oregon State University - College of Engineering, Corvallis, OR

6/2020

B.S. in Electrical and Computer Engineering with a Focus in Energy Systems

Minor in Computer Science

TECHNICAL SKILLS

Computer Languages C/C++, SystemVerilog, PowerShell, VBA, MATLAB, Python, and Ladder Logic

Hardware AC/DC circuit analysis and assembly, encoding and utilizing FPGAs, custom PCB design, 3-phase power, AC motors, and wireless communication

Software CircuitMaker, Arduino IDE, LTSpice/Ngspice, ModelSim, Simulink, HTML, Vi/Vim, Git, dSPACE ControlDesk, Lattice Diamond, L^AT_EX, and Sketchup

PROJECTS

Custom Audio Synthesizer

- Designed an FPGA based machine that accepted input from a PS/2 keyboard, SNES/NES controller, and/or proprietary button board and emitted a note according to which buttons were being pushed
- Approximated sine wave of output tone, rather than a square wave, for a more natural sound
- Utilized a custom ROM for more accurate pitch levels
- Modules were written in SystemVerilog and verified using ModelSim and MATLAB

Bluetooth Enabled Smart Plug

- Designed and constructed a "smart" plug which enabled user to remotely turn an outlet on or off
- Interacts with user via a custom Android/iOS smartphone app, over a Bluetooth or WiFi signal
- Utilized a custom PCB with a fully integrated ESP32 microcontroller
- Capable of handling up to 600W of continuous power delivery
- Featured voice command capabilities enabled through Google Voice Interaction API
- Intra-board communication enabled through I²C serial protocol
- ESP32 microcontroller programmed via Arduino IDE in C++
- More information at: <https://bit.ly/ACSmartSwitch>

RELEVANT WORK EXPERIENCE

US Army Corps of Engineers Hydroelectric Design Center, Portland, OR **6/2019 - 12/2019**

Automated Controls and Cybersecurity Student Intern

- Demonstrated current WAN infrastructure capabilities through modeling concurrent inter-plant network traffic
- Updated/expanded operations and maintenance manuals for hydroelectric dams within the Willamette Valley
- Aided the installation of a new 13.8kV generator step-up transformer unit at The Dalles Dam

Oregon State University, Corvallis, OR

1/2018 - 6/2019

Private Math Tutor

- Met with students multiple times a week in order to help them better understand mathematical concepts up to and including Differential Equations (MTH 256)