

Jacob A. Bills

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EDUCATION

University of Utah (Combined BS/MS Program)

Masters of Computer Science; GPA: 3.889

Bachelors of Computer Engineering; GPA: 3.811

Salt Lake City, Utah, USA

Aug 2022 – May 2024 (Expected)

Aug 2017 – May 2024 (Expected)

RELEVANT COURSEWORK

Graduate Coursework: Advanced Computer Networks, Graduate Algorithms, Digital VLSI Design, Operating Systems, Software and System Security

Undergraduate Coursework: Algorithms, Web Browser Internals, Fundamentals of Electromagnetics and Transmissions Lines, Embedded System Design, Computer Security, Computer Networks, Digital System Design

SKILLS

Programming: C/C++, Python, Verilog HDL, MATLAB, Java, C#

Technologies: Linux, Git, LaTeX, Quartus, Icarus Verilog, ModelSim, Wireshark, GNU Radio, EAGLE, GDB, Bash

EXPERIENCE

Flux Research Group

Salt Lake City, Utah, USA

Graduate Research Assistant

Aug 2022 – Present

- Studied spectrum occupancy between 2.7GHz and 2.9GHz along with details of weather radar operations
- Developed automated radio sample collection system using SDRs in the POWDER platform
- Created workflow to visualize and analyze collected radio IQ samples looking for spectrum-sharing opportunities

Flux Research Group

Salt Lake City, Utah, USA

Undergraduate Research Assistant

May 2020 – Aug 2022

- Explored wireless signal parameters in a controlled RF matrix on the PhantomNet testbed
- Instantiated end-to-end LTE network using SDRs and COTS UE on the POWDER wireless testbed
- Evaluated performance impacts of adjacent-channel interference WiFi on established DSRC/802.11p connection
- Debugged beta software for next generation C-V2X equipment with vendor engineering team

PROJECTS

Matrix Processing Unit | *Verilog*

- Designed a chip to perform matrix operations faster than embedded CPUs
- Simulated and verified logical operation with Icarus and ModelSim
- Synthesized logic using Synopsys to optimize design
- Brought chip to tape-out stage by checking DRC and LVS compliance in Virtuoso

Web Browser | *Python*

- Developed HTTP/2 network stack for requesting and receiving web pages
- Parsed HTML into a tree and drew respective components on the user display
- Designed basic graphical user interface for users to interact with

Wirelessly Controlled Rover | *C, C++, Python*

- Developed python-based control server to issue commands over a network using custom communication schema
- Built receiving network stack on ESP32 using C++ to forward commands to the rover controller over UART
- Constructed a rover controlled by a Cortex-M0 based arm micro-controller which interpreted commands to complete actions remotely