Joey Ah-kiow

Calgary, AB | 403-918-8778| joey.ahkiow@gmail.com| www.linkedin.com/in/joeyah-kiow| joeya20.github.io

Education

University of Calgary | Calgary, AB Sep. 2018 – Present
B.Sc. in Electrical Engineering, GPA 3.75 Expected Graduation: Dec. 2023

- Minor in Computer Engineering
- Relevant coursework: Computer Organization, Digital Systems Design, Digital Electronic Circuits, Embedded Systems Interfacing

Skills

Programming: Java, Python, C#, SQL, C, C++, VHDL, Verilog, SystemVerilog
Hardware: FPGA, PIC, Arduino, MIPS, RISC-V
Software: Quartus Prime, ModelSim, Verilator, GTKWave, GitHub, Linux

Experience

University of Calgary | Calgary, AB Feb. 2022 – Present
Research Assistant

- Conducting research in the domain of Hardware Security in Dr. Benjamin Tan's research group
- Building foundation in computer systems/security concepts such as confidentiality, integrity, availability, access control, speculative execution attacks, side-channel attacks, threat modelling, cryptography, information flow tracking, concolic testing, JTAG
- Completing security validation of compromised RISC-V SoCs to find hardware security bugs in RTL code, build an intuition in the hardware security validation process and find methods to detect potential vulnerabilities earlier in the design cycle

TC Energy | Calgary, AB May 2021 – Present
Field Data Program Management Intern

- Supporting the management of the Field Data program by revising official engineering documents, assisting internal and external stakeholders, maintaining and ensuring data quality, and completing various improvement initiatives
- Creating and managing various Power BI reports to enable data-driven decision making and improve workflow processes
- Developed a Python script to automate the data extraction from ~150 Excel-based forms, saving ~80 hours of work
- Developed a new reporting tool adopted by the Pipe Integrity department (~200 employees) to automate the escalation of reporting, resulting in 60-70% timesaving for management per week

Canadian Natural Resources Limited (CNRL) | Calgary, AB May 2020 – Aug. 2020
Data Provisioning Intern

- Developed and implemented SQL scripts to load, transform, and correct data for internal stakeholders
- Developed two applications using C# and .NET 4.8 to automate (1) the deployment of SSRS reports, and (2) the management of our Tableau server groups and users

Projects

RISC-V Pipelined Processor | GitHub May 2022 – Present
Personal Project

- Developing and simulating a pipelined five-stage RV32I compliant RISC-V processor using SystemVerilog, Verilator and GTKWave

IEEE Host Security Challenge – SoC track | GitHub Apr. 2022 – May 2022
Competition

- Simulating and completing manual code review of SystemVerilog code of an open-source RISC-V SoC to find potential security bugs and concerns, possible exploits and mitigations
- Familiarizing with the RISC-V unprivileged, privileged and debug specifications to understand and define security requirements
- Developing understanding of common digital system modules such as AES crypto engines, AXI, APB, DMA, CDC, JTAG

Proximity-controlled System | GitHub Jan. 2021 – Apr. 2021
Course Project

- Developed and simulated using VHDL, Quartus and ModelSim, and implemented on the Terasic DE10-Lite FPGA board
- Used an ADC to interface a proximity sensor and output the readings to seven-segment displays in voltage or distance units, and controlled the frequency of a buzzer and the brightness of an LED array using PWM
- Utilized shift registers to store the last 256 proximity sensor readings and average them to reduce the effect of outliers and stabilize the system input