Lefan Hu

l2hu@uwaterloo.ca | Personal Website | LefanHu | Lefan-Hu | Waterloo, Canada

Education

University of Waterloo - Bachelor of Applied Science in Computer Engineering

Undergraduate Research Assistantship: Vehicle grade Linux OS security testing through power analysis — Sep. 2022 - Present

Technical Skills

Programming	C, C++, VHDL, SystemVerilog, Kotlin, Python, MatLab, JavaScript, HTML/CSS, MySQL, LaTeX
Developer Tools	Git, Github Actions, AWS, AWS SAM, GCP, PUB/SUB, Docker, Linux, Java Spring Boot, Shell
Other Tools/Software	Vivado, Verilator, Quartus Prime, Fusion360, Android Studio, Arduino, NodeMCU

Work Experience

Software Developer: Technological Innovation Team — *Ottawa, ON*

CIENA Corporation — September 2024 - April 2024

- Developed major releases of a data aggregator tool used by hundreds of engineers within CIENA.
- Built Splunk search queries to quickly identify common errors 80% faster on hardware devices.
- Utilized Python and Jupyter Lab for general automation of complex log archives by creating a comprehensive suite of scripts.

Software Developer: RCOE Team — *Toronto, ON*

TELUS Corporation — May 2023 - August 2023

- Contributed to major tool for reliability — ACMP, an auto-call management service for automatic dispatching of field technicians.
- Built, tested, and deployed production images of ACMP service to customer-facing Docker swarms.
- Adopted GCP Pub/Sub model to facilitate secure communication — enabling internal database access through external services.
- Developed software using the serverless architecture to create a Java Spring Boot chat service, reducing compute cost by 20 times compared to other internal services.

Projects

Security testing of vehicle grade Linux OS [C, vSomeIP, Linux] — *Waterloo, ON*

Undergraduate Research Assistantship: Ongoing — Jan. 2025 - Ongoing

- Description: Analyzing power consumption and trace data of information to identify presence of malicious software.
- Conducted various security tests on vSomeIP implementation at request of AVL to evaluate vulnerability of automotive system to attacks.
- Created replicable testing environment using Docker to enable remote security tests for team.
- Tools used: Bash, RaspberryPi, Docker Networking, vSomeIP.

Arithmetic Compute Units [System Verilog, FPGA, Vivado, RTL Design] — *Ottawa, ON*

Lab Project — August 2024 - Now

- Description: A suite of compute units written in system verilog for the PYNQ FPGA.
- Designed, simulated, and synthesized a matrix multiplier implementing systolic data flow.
- A series of supplementary modules such as division, pipelined exponential, and gaussian error linear unit modules.

SDXL LORA Adapter [Stable Diffusion, AWS, Python, HuggingFace] | — *Ottawa, ON*

Personal Project — January 2024 - April 2024

- Description: A react web app for generating high quality images of Taylor Swift based on text prompt.
- Tuned custom LORA adapter for SDXL model on AWS G4DN GPU instance by leveraging HuggingFace Accelerate.
- Hosted on HuggingFace Serverless Inference — eliminating idle resources.

Interqu: Interview training tool [AWS Tools, AngularJS, ML] | — *Ottawa, ON*

Group Project — Jun. 2023 - Aug. 2024

- Description: A web app that lets users practice their interview skills and receive feedback.
- Deployed various ML models using AWS Lambda for providing users with feedback on their responses and behaviour.
- Backend hosted using AWS Serverless Application Model. Used AWS buckets and MongoDB for storing user data.
- Tools used: AWS(SAM, Lambda, Sagemaker, Transcribe, Step functions), Angular, GitHub Workflows, PyTorch, and Docker.

Other Projects: HiveHQ — Custom Drone — Media Stack

References available on request

Looking for a 4/8 month co-op