Marko Renić

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Skills

Languages: C/C++, Python, ARM Assembly, VHDL, Kotlin

Technologies: Ansible, Docker, Quartus Prime, uVision, Linux, I2C, UART, Perforce

Experience

Nvidia - DGX Validation Team — Houston, TX

Software Developer Intern - ***Python, Bash, Ansible, Docker, Perforce, Hardware, Linux*** *Sep 2022 – Dec 2022*

- Developed system level lab tools used for stress testing and validation of next gen AI products.
- Created test plan and managed reboot testing across 4 systems and 8 GPU boards.
- Built a tool in **Python** for creating dynamic stage-based system testing using JSON.
- Prototyped a tool for validating GPUs without the need of a CPU or OS through **UART**.
- Containerized validation tools using **Docker** reducing setup time up to 75% for some tools.

Nvidia - DGX Validation Team — Toronto, ON

Software Developer Intern - ***Python, Bash, Ansible, Perforce*** *Jan 2022 – Apr 2022*

- Implemented **Python** and **Bash** tools for validating power sequencing for DGX products through PCIe and **I2C**.
- Improved reliability and lab system uptime by creating **Ansible** playbook for deploying tools and firmware updates.
- Extended a **Python** script to generate visualization of PCIe bus topology address on physical GPU board, reducing possibility of human error in GPU debug/replacement.

Sartura — Zagreb, Croatia

Software Engineer Intern - ***C, Python, eBPF, Git, Linux*** *May 2021 – Aug 2021*

- Lead a project for tracing and analyzing system calls of Linux processes from inside the **Linux kernel** using eBPF.
- Designed and implemented an **anomaly detection algorithm** using Scikit for detecting suspicious activity such as unusual file access by Linux processes using unsupervised learning.
- Improved the filtering algorithm of BPF events by adding smart filtering using AI and adding filtering on the device (**embedded C**), decreasing the data sent by up to 70%.
- Coordinated with the cloud team on the integration of the pipeline linking the kernel space BPF programs with the cloud and frontend, using JSON, **sockets** and RPC calls enabling real-time monitoring of Kernel events

Projects

*Decentralized Voting App - DiVA (**Hack the North 2021 Winner**)* - ***Solidity, Python, Web3.py***

- Collaborated with 3 other developers to revolutionize polling by utilizing the **blockchain** and **machine learning**.
- Increased security by with photo ID matching verification using Microsoft Azure's Face API with 78% accuracy.

Autonomous Car with GPS-like navigation - ***C#, Python, OpenCV, Tensor flow, Arduino, Raspberry Pi***

- Prototyped a model autonomous toy car that is navigated by satellite using computer vision
- Utilized OpenCV for real-time detection algorithm of the car and its environment which localized the car and an A* algorithm finds the shortest path to the destination. Optimizing the taken path, reducing emissions.

WLP4 Compiler - ***C++***

- Developed a compiler for a strict subset of C++. Including parser, scanner, assembler and code generation.

Chess with CPU player - ***C++***

- Implemented Chess game in **C++** with 2D graphics using SDL2, including variable difficulty CPU player.

Education

University of Waterloo — Waterloo, ON

Bachelor of Software Engineering, Honours, Co-operative Program – CGPA: 84.7/100 *2020 – 2025*

- Courses: Algorithms, Compilers, Data Structures, Assembly, FPGAs, OOP, Databases, OS, UI