Marko Renić

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Skills

Languages: C, C++, Python, ARM Assembly, VHDL, Kotlin
Technologies: Ansible, Docker, Kubernetes, eBPF, Linux, VxWorks, Helix Hypervisor, QEMU, Git, Perforce

Experience

WindRiver - CTO Office — Ottawa, ON

Edge Software Developer - ***C, K8s, QEMU, Helix, VxWorks, Linux, Xilinx PetaLinux*** — *May 2023 – Present*

- Building a reference implemenation of a software defined vehicle for the latest automotive platforms.
- Integrating **VxWorks** and **WR Linux** on a single Xilinx board, using **Helix Hypervisor**.
- Employing **Kubernetes** for deploying and managing critical workloads between the OSs and enabling safe OTA.
- Consolidating critical and non-critical systems, reducing the number of onboard compute units required by 90%.

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.
- Containerized validation tools using **Docker** reducing setup time up to 75%.

Nvidia - DGX Validation Team — Toronto, ON

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

- Prototyped a tool for GPU validation without a CPU or OS through **UART**.
- Increased reliability and lab system uptime by utilizing **Ansible** for deploying tools and regular firmware updates.
- Implemented a Python script to visualize PCIe bus topology on the physical GPU board, reducing the possibility of human error in GPU card identification during testing.

Sartura — Zagreb, Croatia

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

- Led a project to trace and analyze Linux processes' system calls from inside the kernel using **eBPF**.
- Implemented an unsupervised anomaly detection algorithm using **Scikit** to identify suspicious process behavior.
- Optimized eBPF event filtering with smart on-device filtering, reducing data transmission by up to 70%.
- Collaborated with the cloud team to integrate kernel space eBPF programs with the cloud and frontend, enabling real-time monitoring of Kernel events using **sockets**, and **RPC calls**.

Projects

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.

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

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

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

- Collaborated with 3 developers to revolutionize election technology by utilizing the **blockchain** and **computer vision**.

Education

University of Waterloo — Waterloo, ON

Bachelor of Software Engineering, Honours, Co-operative Program – CGPA: 84.5/100 — *2020 – 2025*

- Relevant Courses: Algorithms, Compilers, Data Structures, Assembly, Signals, FPGAs, OOP, Databases, OSs, UI