Alexander Uamai | BASc Mechatronic Systems Engineering

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WORK EXPERIENCE

Pipeline Technical Developer Intern — *Digital Domain*

JAN 2022 – APR 2022, VANCOUVER, BC

- Collaborated with Digital Domain's Character Effects (CFX) department, contributing significantly to key project initiatives.
- Executed a seamless migration of pipeline tools from Python 2 to Python 3, aligning them with the latest industry standards.
- Conducted thorough testing and debugging of Python-based pipeline tools, resulting in substantial enhancements to tool reliability and stability.

Manufacturing Engineering Intern — *VMAC Air*

SEP 2021 – DEC 2021, NANAIMO, BC

- Designed enclosure and components for a novel air compressor test bench, showcasing proficiency in SolidWorks.
- Developed a web-based interface for monitoring data from the compressor test bench; parsed JSON data to generate informative charts and graphs illustrating test throughput.
- Ensured manufacturing quality by meticulously reviewing engineering drawings, guaranteeing compliance with standards and passing rigorous quality checks.

Software Engineering Intern — *Ziva Dynamics*

MAY 2021 – AUG 2021, VANCOUVER, BC

- Engineered a groundbreaking tool enabling VFX artists to submit and render scenes on cloud computers directly from within Maya.
- Developed a robust menu bar and toolbar for Ziva's VFX 2.0 Maya plug-in using PySide enhancing the user interface for seamless navigation and increased efficiency.
- Transitioned Ziva's simulator cache mechanism to an alternative solution, resulting in accelerated character simulation and improved overall performance.

Information Technology Intern — *Mulgrave School*

JAN 2021 – MAY 2021, WEST VANCOUVER, BC

- Delivered exceptional Level 1 technical support, offering expert guidance to students and staff, swiftly resolving queries and technical issues.
- Pioneered the deployment of OctoPi on Raspberry Pi devices, significantly enhancing 3D printing capabilities at the school.
- Designed and fabricated custom enclosures for Raspberry Pi cameras, mounting them on 3D printers for remote monitoring and real-time monitoring, showcasing practical IT skills and creativity.

ENGINEERING DESIGN TEAM

Alivio Technologies — *Controls Lead*

- Led controls development for "Lief", a groundbreaking wearable designed to alleviate foot dystonia discomfort.
- Engineered firmware to manage dual coin-type vibration motors within a foot wrap, enhancing user experience.
- Conducted hands-on assembly, soldering the vibration system onto a protoboard for seamless integration with the device.

EDUCATION

Simon Fraser University

SEPTEMBER 2018 – AUGUST 2023

BASc Mechatronic Systems Engineering

Deans Honour Roll Spring and Summer 2023

TECHNICAL SKILLS

Languages

C, C++, Python

Tools

Git, GitHub, Jira, MATLAB, Simulink, SolidWorks, Oscilloscope, Linux

Other

UART, I2C, SPI, STM32, Arduino, Raspberry Pi, Qt, GD&T, DFM, CAD

PROJECTS

Dynamic Motion Interface for Game Control

STM32F407VG, C, Python, SPI, USB

Engineered firmware in C for an STM32 microcontroller to enable dynamic motion control in a 2D desktop game. Developed SPI drivers to establish communication between the microcontroller and the accelerometer. Implemented timers and interrupts for efficient streaming of sensor data to the game through USB.

Design and Control of a Two-Wheeled Self-Balancing Robot

Matlab, Simulink, Simscape, State-SpaceModeling

Designed a feedback control system for a two-wheeled self-balancing robot using Matlab, and Simulink, employing state-space methods for system dynamic analysis, controllability, and observability to achieve stable balancing. Developed a visual simulation of the robot using Simscape.

Wind Energy Conversion System Design

Matlab, Simulink, Power Electronics, Control Systems

Led the design of a wind energy conversion system, utilizing Matlab and Simulink for modeling and optimization of control strategies, power conversion, and system performance. Delivered a detailed report covering theoretical analysis, calculations, and simulation results under varying conditions.