Nnamdi Monwe

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SUMMARY

A multidisciplinary engineer with experience in crafting hardware and software solutions for embedded systems, autonomous robots, and 3 year of effective leadership experience in University's Robotics Club.

EDUCATION

Wayne State University   Detroit, MI
Bachelor of Science in Computer Science   *Aug. 2018 – May 2022*
- Relevant Coursework: Software Engineering, Data Structures & Algorithms, OOP in Java, Database Management

George Brown College   Toronto, Canada
Tech. Diploma in Electromechanical Engineering   *Aug. 2016 – May 2018*
- Relevant Coursework: Digital Electronics, Embedded Systems, Sensors, Machining, Motors & Controls, Circuits

TECHNICAL SKILLS

Developer Tools & Languages: C, C++, Python, Bash, Java, MySQL, HTML/CSS, Git, Linux, ROS, Figma, Docker, Matlab
Hardware: Prototyping, PCB's, Solidworks, Onshape, KICAD, Camera, LIDAR, IMU, I2C, SPI, UART, Arduino, FPGA, GPU

EXPERIENCE

Hardware Engineering Intern   May 2021 – Aug. 2021
Red Leader Technologies (Li-DAR Startup)   *Mountain View, CA*
- Used CUDA to convert FFT based signal processing module to run on a GPU and decrease computation time to 25ms.
- Sped up python based point cloud visualization software from 3.4 FPS to 16 FPS by porting computation to GPU.
- Modified a support vector machine to work with proprietary file format and enable robust pedestrian classification.
- Created a tool to automate stitching LiDAR output frames together and compress them into a ROS Bag file.

President of University's Robotics Club   Oct. 2018 – Present
College of Engineering, Wayne State University   *Detroit, MI*
- Co-ordinated work assignments, code reviews, and design reviews to successfully complete 4 autonomous vehicle projects.
- Assembled multiple prototype wiring harnesses to achieve safe and stable operation of critical robot sensors.
- Implemented vision based SLAM and advanced path planning algorithms to achieve intelligent real time control of robot.
- Designed and machined drive-train and chassis components out of 6061-grade aluminum to complete robot assembly.
- Managed budgets ranging from $2,000 - $10,000 to enable successful completion of robotics projects.

Undergraduate Research Assistant   Jun. 2019 – Oct. 2019
Electrical Engineering Dept, Wayne State University   *Detroit, MI*
- Developed integrated embedded solutions for the fabrication of a prototype medical assistive device.
- Refactored existing backup control system software to increase error sampling rate by 2kHz.
- Designed double sided PCB to upgrade current capacity and decrease electronics footprint by 50%.
- Fabricated linear actuation system using Solidworks that safely extended lifting capability to 250 pounds.

PROJECTS

Aasha (Autonomous Ground Vehicle) | *ROS, C++, Python, Tensorflow*   Aug. 2021 – Present
- Crafted a robust end to end lane detection module to map lane lines using a U-Net based Neural Network and OpenCV.
- Integrated RTK based GPS system into robot navigation package which led to outdoor localization of less than 1.5ft.

Veronica (205lb. Autonomous Ground Vehicle) | *C++, Python, ROS, OpenCV, Qt, Git*   Jun. 2020 – May 2021
- Wrote firmware in C++ to establish 2-way serial communication between sensors and microcontrollers.
- Created Qt based GUI tooling to decrease production time of configuration files by 50 percent.
- Engineered a closed loop emergency stop system to safely halt robot operations from 200 meters away.

CheapSat (Open Source CubeSat Prototype) | *Embedded C/C++, Python, Qt*   Feb. 2021 – Apr. 2021
- Developed a desktop application to visualize 10 key data points such as altitude, velocity, and temperature.
- Fabricated a solid state storage system using an array of 8 EEPROM chips and ATmega8 to log system data.
- Modified gains in PID algorithm to decrease thermal oscillation which resulted in more stable internal temperatures.

3D Printed Exoskeleton (Assisting Grad Student) | *C++, MATLAB*   Jun. 2020 – Aug. 2020
- Improved code for mapping rotary encoder data to linear actuators with approximately 7ms of delay.

RideXP (NFC Payment Mobile App/Hackathon) | *Java, C++, Figma, STM32*   Jun. 2018 – Aug. 2018
- Constructed payment beacon using STM32 and PN532 NFC chip to interface with Android mobile application.

AutoDraw (3-Axis Plotter) | *C++, Python, Arduino*   Feb. 2018 – Apr. 2018
- Fused 2 sets of infrared sensors and auto feed mechanisms to position and mitigate misalignment from user error.