Jack (Jianxiang) Xu

4A Mechatronics Engineering - AI Option | University of Waterloo | B.A.Sc (2016 - 2021)

jackxu.io
(289) 242-7243
/JXproject
/in/Jack-xu-jxinbox
j337xu@uwaterloo.ca

SKILLS

Software	C++, C, Python, C#, Java, Javascript
Tools	ROS, Linux, Git, FreeRTOS, OpenCV, OpenGL, HoloLens, Unity, IAR, VisualStudio, MATLAB, CAN
Hardware	LabVIEW, NXP ARM M3/4, AVR, PLC, Arduino, ESP8266, Soldering, Rapid Prototyping
Mechanical	Fusion 360, AutoCAD, SolidWorks, VectorWorks, Laser Cutting, 3D printing, Machining

EXPERIENCE

Body Control Firmware Intern | **Tesla, Inc.** *(Jan. 2020 - Aug. 2020)*

- Developed thermal protection model for M3/Y steering columns.
- Mainly developing ultrasonics sensing technologies to support autopilot in embedded controllers.
- Developed many automation toolsets needed for the developments. (Python, C)

Body Control Firmware Intern | **Tesla, Inc.** *(May. 2019 - Aug. 2019)*

- Raised issues and improved the driver profile recall interface for Model 3 Seats with a full coverage of unit tests
- Coordinated with multiple teams to develop the interface to allow a real-time coordination between the first and second row seats on the Model X (Python, C, MATLAB, CAN)
- Developed various toolsets for data analysis and system modeling to assist multiple developments (Python)

Jack of All Robots | **Trexo Robotics** *(Sept. 2018 - Dec. 2018)*

- Built medical pediatric exoskeletons for children with walking difficulties & Brought back a smile to many families
- Developed a robust full stack software system that covers from firmware *(C, FreeRTOS, Cortex M4 & AVR)*, middleware *(ROS & ROS_Control, Linux Environment)*, debugging tools *(Python)*, and Android applications *(C, C++, Java, ROS Java)*, providing a seamless and comfortable rehabilitation experience
- Conceived a new control system allowing patients to initiate steps as they please & Optimized application by 50%

Team Lead | **Hummingbot - International Autonomous Robot Racing Team (IARRC)** *(Jan. 2018 - Sept. 2019)*

- Leading and managing a team of 20 students, developing a fully autonomous mobile robot that is capable of maneuvering through obstacles, lanes, and traffic signs in high speed on rough terrains *(Jetson TX2, ZED, M4)*
- Conducting mechanical, electrical and software system designs for the robot *(SolidWorks, ROS, C++, C)*

AR Software Engineering Intern | **Interaptix Augmented Reality** *(Jan. 2018 - April. 2018)*

- Created a state-of-the-art real-time AR project and also conducted various R&D in CV and ML
- Developed a variety of evaluation tools *(C++, OpenGL, Python)* for multi-camera synchronization and networking
- Implemented custom calibration and point-cloud rendering for multiple RGB-D cameras

Embedded Firmware Developer | **Baanto, Nytric Inc.** *(May. 2017 - Aug. 2017)*

- Improved performance of the firmware and developed a unique and adaptive algorithm *(C++)* to recognize polygon shapes for multi-touch ShadowSense touchscreens in realtime over 60Hz in all form factor
- Devised useful analysis tools *(Excel, VBA, Python)* and a real-time sensor data visualizing application *(C#, C++, Unity)*, which minimized time and efforts spent on debugging and testing by over 60% (The visualizer has also being used for conference demos to showcase complex operations behind the scenes)

PROJECTS

Ctrl-F-IRL *(Mar. 2018)*	Made a real-time offline AR searching tool on the Android platform, which brings 'Ctrl-F' experience in real life to highlight all key words in a glance with the cellphone camera *(Java, ABBYY)*
TrackyfAI *(Sept. 2017)*	Built a surveillance processing tool (for Canadian Special Operations Force Command) that allows military analysts to better analyze large quantities of video footage *(YOLO, Python, OpenCV)*
Project Helm *(Feb. 2017)*	Designed and developed a smart IoT helmet for bikers that provides haptic feedback and visual cues for both bikers and approaching vehicles *(C, C++, Xadow Kit, IMU)*
Synthesizer *(Jan. 2017)*	Created a music synthesizer from scratch within 12 hours, using provided Arduino, Gyro, and other hardware components. (2nd place in IEEE Hackathon) *(C, C++, Rapid Prototyping)*

ACTIVITIES

IARRC Org.	Initiated a new organization team for the 2019 International Autonomous Robot Racing Competition
UW MarsRover	Worked on mechanical and computer vision systems for an autonomous Mars Rover robot
Photography	A short break to retrieve myself back from my work to discover the beauty of every moment