Jack (Jianxiang) Xu

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

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SKILLS

Software	▪ C, Python, C++, 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

TableUV
(2020 - present)
- Designing an autonomous table-top sanitizing robot that is cost-effective and relatively compact which can be used to disinfect surfaces in public spaces in order to reduce disease transmission.

StewartMaze
(Oct.-Dec. 2019)
- Designed and built an autonomous maze solver with Stewart Platform via vision feedback from a web camera. *(C, Python, OpenCV)*

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)*

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)*

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