Roy Xing
Roboticist

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SKILLS

Programming	C++, C, Python, MATLAB, Arduino, valgrind, gdb, emacs, Linux, git
Electronics | CAD	Embedded Systems, EagleCAD, LiDAR, FreeCAD, OnShape, Soldering
Robotics	ROS, OpenCV, Control Theory [MPC LQR PID], Nonlinear Dynamics, SLAM, Linear Algebra, Inverse Kinematics (IK), Reduced Order Models [SLIP, ASLIP, etc.], ABB RobotStudio

EXPERIENCE

Present – Jan 2021 | Thinking Robots | Roboticist
- Worked on manufacturing and developing novel open source self charging mobile robotics base for UV solutions during the COVID-19 pandemic.
- Created extension for social robotics' chasis, enabling future add-ons and support modules.

OnShape | AMR's | C++ | 3D printing | Robot assembly

Present – Oct 2019 | MassRobotics | Robotics Assistant Lab Manager and Robotics Technician
- Programmed numerous AMRs (Autonomous Mobile Robot) for live demos and simulations.
- Setup, programmed, and maintained various robot arms.
- Managed, built, and designed 3D printers, robot grippers, and quadrupedal robots.
- Wrote libraries for actuators, end-effectors, and sensors for low level processes and ROS compatibility.
  - **Robotics Contractor for Cleo :** Wrote ROS framework for IR thermal cameras (for 3D mapping), worked with flight controllers and software for ModalAI VOXL for use on an innovative single duct drone.

Toyota HSR | UR5 | UR10 | Mitsubishi Arms | quadrupeds | ROS | grippers | LiDAR | Intel RealSense | Carbon Fiber 3D Printers | IR thermal cameras | SLAM | ModalAI VOXL (embedded systems) | drones

Sept 2018 – Aug 2019 | Dynamic Robotics Laboratory (PI : Dr. Jonathan W. Hurst) | Research Assistant
- Conducted research on the physical principles of legged locomotion through dynamic analysis and biomechanics research. Worked with and aided in maintaining a CassieV2 from Agility Robotics (lab spin-off).
- Implemented MPC (Model Predictive Control) in MATLAB and Python meant for walking LIP (linear inverted pendulum) as seen in the MIT Cheetah 2 for autonomous mobility.
- Aided in outdoor experiments of the Cassie robot's reinforcement learning walking controllers.

Cassie Robot | Control Theory | MPC | EGB | Bipedal Reduced Order Models | SLIP | LIP | MATLAB | Python

Sept 2018 – June 2018 | Booz Allen Hamilton (Defense Consulting Firm) | Air Force Division Systems Operations Intern
- Wrote code on projects such as organizational operation programs and performed code reviews of various languages (Python, C++, C, VBA) for a broad range of contracts and subsystems.

Python | C++ | C | VBA

Sept 2016 – June 2016 | Aptima (Military Defense Contractor) | Computer Vision and Robotics Intern
- Wrote programs for solving advanced computer vision problems based on aerial drone video datasets with OpenCV in C++.
- Created ROS (Robot Operating System) projects for brain controlled robotics in Python.

C++ | OpenCV | ROS | Python | drones | Kinova Arm

EDUCATION

2018 Oregon State University [Honors College] [GPA : 3.97/4.00] [BS : Electrical and Computer Engineering with a focus in Robotics (Minor in CS and Maths)]

HONORS AWARDS PUBLICATIONS

>Paper acknowledgements, "Eliminating Peak Impact Forces by Customizing the Passive Foot Dynamics of Legged Robots"
>Journal acknowledgements, "Mitigating Peak Impact Forces by Customizing the Passive Foot Dynamics of Legged Robots"
>AFCEA (Armed Forces Communications and Electronics Association) Fellowship Award 2018
>Letter of Commendation by Commonwealth of MA Speaker of the House for Achievement in STEM
>Official Citation by MA State Senate for STEM excellence for winning the RWDC State Championship and National Challenge Merit Award

PROJECTS

Wheeled Biped : Biped robot on wheels like Boston Dynamics' Handle C++ | C | Python | Control Theory | LQR | Cascaded PID | IK

Fetch | Turtlebot3 : AMRs I made to navigate and fetch user designated objects Turtlebot3 | CAD | OpenCV | ROS | SLAM