DAVIN LANDRY

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EDUCATION

NORTHWESTERN UNIVERSITY Evanston, IL
Master of Science in Robotics December 2022

PURDUE UNIVERSITY West Lafayette, IN
Bachelor of Science in Mechanical Engineering May 2019
Certificate in Entrepreneurship and Innovation May 2019

WORK EXPERIENCE

The INSTITUTE For HUMAN MACHINE COGNITION (IHMC) Pensacola, FL
Robotics Engineer: Lead of QUIX ExoHaptics Project June - Sept 2022

- Developed and implemented haptic feedback devices for the QUIX lower-body rehabilitative exoskeleton
- Programmed serial communication system from Java to C for the haptic device to relay walking gait states
- The system met real-time constraints to enable leg awareness for exosuit pilots
- Integrated and validated ExoHaptics with force plate testing equipment to interpret Center of Pressure feedback for balance perception and stability awareness for lower body exoskeletons

Robotics Engineer: NADIA Humanoid Robot Project Feb 2020 - Aug 2021

- Conducted literature review on humanoid robotic feet to design and prototype several robotic feet, incorporating bio-inspired toes to better utilize "roll-over shape" and add the 4th linkage of bipedal systems
- Defined requirements and tested 6-axis Force/Torque sensor for center of pressure sensing in the robot foot
- Designed collapsing mold for layering carbon fiber upon for consistent inner surface topography of structural robot thigh shell, making carbon fiber thigh shells easier and more reliable to manufacture

SELECTED PROJECTS

Shear Haptics: VR haptic controller (Unity, Arduino IDE, Mechatronics, Onshape) Jan - March 2022

- Designed and prototyped a set of VR haptic controllers that use shear movement in the grip to simulate weighted objects in motion and in impact
- Developed a virtual demo environment and C# scripts in Unity to test and demonstrate the haptic feedback

SLAM: Simultaneous Localization and Mapping from scratch (ROS, C++) Jan - March 2022

- Designed and implemented SLAM package in ROS, using C++, for a Turtlebot3 differential drive robot
- Created C++ libraries for calculating 2D rigid transforms and Extended Kalman filters

Ball Balancing Robot: "Balanciaga" (Python, ROS, Computer Vision, Embedded Systems) Sept - Dec 2021

- Led a team of robotic engineers to develop a ROS package that controls a 7 DOF Franka-Emika Panda Arm
- The robot guides a ball to navigate mazes drawn on the whiteboard attached to its end-effector
- Implemented the computer vision pipeline for real-time ball detection and maze detection using OpenCV for HSV color detection and contour tracking

Quadrotor Control (C++, Controls) Jan - March 2022

- Programmed a multi-degree-of-freedom PID controller and user control system for a quadrotor platform
- The resulting controller could maintain position in space autonomously with IR tracker and onboard IMU

Robot Toes: "RoboToe" (ROS, Embedded Systems, C++, Mechanical Design, Onshape) Sept - Dec 2022

- Implemented new toe linkage to the OP3 bipedal robot for a more efficient and human-like walking gait
- Updated outdated ROS package on Robotis OP3 humanoid robot
- Designed and tested different foot designs on the OP3 robot measuring energy efficiency and walking speed

RELEVANT SKILLS

Programming: Python, C++, C (Embedded), Java, HTML & CSS, MATLAB
Software Development: ROS, Git, Unity, Gazebo, OpenCV, MoveIt, Unit Testing
Design Software: OnShape, SolidWorks, Creo, CATIA V5, AutoCAD
Other Skills: Mechanical Prototyping, CPR & First-Aid Certification