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SKILLS	<ul style="list-style-type: none"><li>• Simulation Skills: SolidWorks, AutoCAD, Arduino IDE.</li><li>• Programming Skills: Python (Numpy, SciPy, PyTorch), C/C++.</li><li>• MATLAB Skills: App Designer, Simulink, Simscape.</li><li>• Operating Systems: Windows, Linux, Robot Operating System (ROS).</li></ul>	
RESEARCH EXPERIENCE	<b>MATLAB App for treadmills: COM tracking and self-pacing control</b> Northeastern University, Boston, MA May 2022 – May 2023 <ul style="list-style-type: none"><li>• Established a communication between an instrumented treadmill sensors and <b>MATLAB</b> with a <b>C++</b> based software development kit (<b>SDK</b>).</li><li>• Developed a <b>Human Machine Interface (HMI)</b> in MATLAB for controlling the treadmill, <b>processing sensor data</b>, simplifying access to walking data.</li><li>• Applied <b>Kalman Filter</b> to estimate statements of a subject in a walking test and adjusted the speed of the treadmill using a speed <b>controller</b>.</li><li>• Developing a <b>kinetic model</b> to estimate the lateral movement during steady walking and validating the accuracy of the model using a <b>motion capture system</b>.</li></ul>	
PROJECT EXPERIENCE	<b>Turtlebot-based SLAM and April Tag Detection(Python/ROS/SLAM/Rviz)</b> Northeastern University, Boston, MA March – April 2023 <ul style="list-style-type: none"><li>• Established communication between a Turtlebot equipped with an inertial measurement unit (IMU), a <b>Raspberry Pi</b> to a remote PC, transmitting and receiving sensor data in <b>Robot Operating System (ROS)</b>.</li><li>• Implemented <b>simultaneous localization and mapping (SLAM)</b> using multiple packages, such as <b>GMapping</b>, <b>move_base</b>, and <b>explore_lite</b>, on a Turtlebot to efficiently navigate through environments, <b>avoiding obstacles</b>, and generating an occupancy map, with real-time updates visualized in <b>Rviz</b>.</li><li>• Developed a <b>Python script</b> to receive the <b>AprilTags</b> messages from the camera frame, and subsequently transformed them into the map frame, detecting 7/7 tags.</li></ul> <b>Feature Attribution in Predicting Survival on the Titanic(Python/Pytorch)</b> Northeastern University, Boston, MA November – December 2022 <ul style="list-style-type: none"><li>• Implemented a <b>neural network model</b> to predict survival on the Titanic.</li><li>• Implemented integrated gradients, with <b>PyTorch</b> to estimate the importance of each feature in the model, finding the most important feature related to survival rate.</li></ul> <b>DC Motor Control by Simulink and Arduino IDE(Python/Arduino)</b> Northeastern University, Boston, MA October – November 2022 <ul style="list-style-type: none"><li>• Constructed <b>Simulink</b> code with a <b>feedback control system</b> to adjust the position of a DC motor, and compared experimental results with <b>Simscape</b> simulations.</li><li>• Developed and implemented an <b>embedded code</b> using <b>Arduino UNO</b> to regulate the speed of a motor, reducing the error rate, and significantly enhancing overall performance.</li></ul> <b>A Multi-functional Stroller(SolidWorks/AutoCAD)</b> Nanchang Institute of Technology, Jiangxi, China February 2021 – June 2021 <ul style="list-style-type: none"><li>• Designed a functional prototype of a stroller independently, employed <b>SolidWorks</b> to generate an assembly drawing, and simulate the stroller movement by Motion Simulation.</li><li>• Completed a document including structural strength computation, transmission speeds, and simulation analysis.</li></ul>	
EDUCATION	<b>Northeastern University</b> , Boston, MA, USA September 2021 – May 2023 Master, Mechanical Engineering, GPA:3.76/4.0 <b>Nanchang Institute of Technology</b> , Jiangxi, China September 2017 – July 2021 Bachelor, Mechanical Design, Manufacture and Automation	