

Amanda Hoeksema

SULI

General Audience Abstract

Amanda Hoeksema's work as a summer SULI intern revolved around her involvement in the Accelerator Directorate's Robotics Group. She worked hands-on with developing the prototype for a new industrial inspection robot. The research and development robot's (RD) function visually identifies physical failures in the accelerator tunnels instead of personnel, saving them from unnecessary radiation exposure. The robot RD uses a rocker-bogie suspension to navigate uneven terrain and traverse stairs. RD also achieves high mobility with omnidirectional wheels, permitting ease of movement in confined spaces. Hoeksema was responsible for the robot's design and the prototyping, testing, and research conducted on RD to evaluate the effectiveness of climbing stairs with omnidirectional wheels mounted to a rocker-bogie suspension. She also worked on the electrical and software components of the robot, creating the necessary connections and writing MicroPython scripts to power and control the motors. Her summer work allowed her to gain hands-on mechatronics experience by assembling the prototype and establishing electrical connections. The results of her work in developing the prototype for the new reconnaissance robot affect the full-scale robot's design and guide it toward the most optimal configuration.