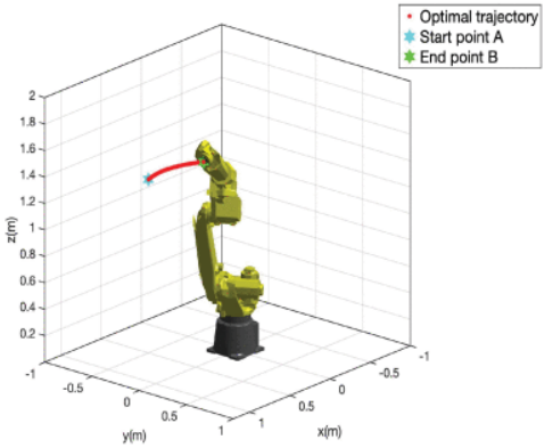
Path Planning Algorithm for Automated Fiber Placement

Role	Organization	Date
Robotics Engineer Intern	Stevens Prototype Object Fabrication Lab	May 2024 - Dec 2024

What I did

Used OpenCV and computer vision techniques to map the robot's workspace. Created a virtual testing environment for the DOOSAN H2515 collaborative robot using MATLAB and ROS 2.0. Designed a 3D model of the roller end-effector in SolidWorks and developed the PCB in C++.



How I did it
Utilized OpenCV and omputer vision techniques to map the robot's workspace. Created a virtual testing environment for the DOOSAN H2515 collaborative robot using MATLAB and ROS 2.0. Designed a 3D model of the roller end-effector in SolidWorks and developed the PCB in C++.

Tools & Results

Tools/Environments:

- DOOSAN H2125 collaborative robot.
- MATLAB simulation environment.

Results:

- Successfully developed a Path Planning Algorithm for Automatic Fiber Placement.
- Enhanced lab operations with improved algorithm efficiency and reliability.
- Reduced testing time and costs by using the virtual environment.

Special Skills

- MATLAB & ROS 2.0 Development
- OpenCV & Computer Vision Mapping
- Python Programming for Path Planning
- SolidWorks 3D Modeling
- PCB Design and C++ Programming

Robotics	Machine Learning	Control Systems	Embedded Systems
3D CAD Modeling	Computer Vision	Image Processing	Artificial Intelligence
Sensor Fusion	Optimization	Signal Processing	AutomationEngineering
MATLAB	Python Programming	ROS 2.0	PCB Design