

# Autonomous Welding Robot Team 51



ISE

COE

ME

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## Introduction

Our project aims to efficiently detect and weld cracks in pipe systems using simple and safe methods.

### Problem statement

Crafting safer, smarter, swifter welding in high-risk industries.

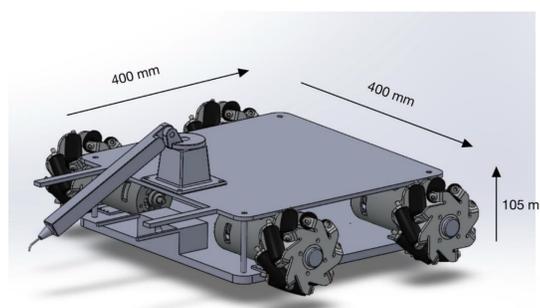
### Project Impact

Our Autonomous Welding Robot revolutionizes industrial pipe maintenance by automating crack detection and welding. It reduces downtime, enhances safety, and improves efficiency, setting a new standard in productivity for modern industry.

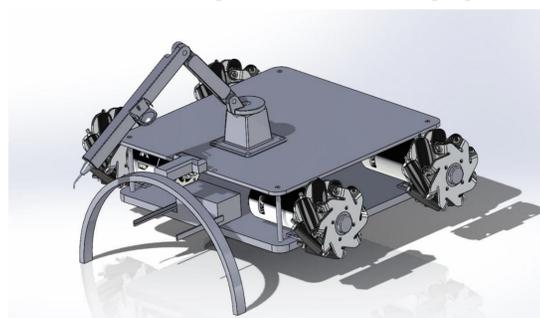
### Constraints & Specifications

Constraints	Specifications
Budget <5000SR	Robot movement: 360°
Reach and precision	Electrode size: 2.4mm
Safety Standards	Welding time: <5 minutes
Payload capacity	Welding Area :1000 mm
Power supply	
Environmental Conditions	

## Prototype Development



### Initial prototype



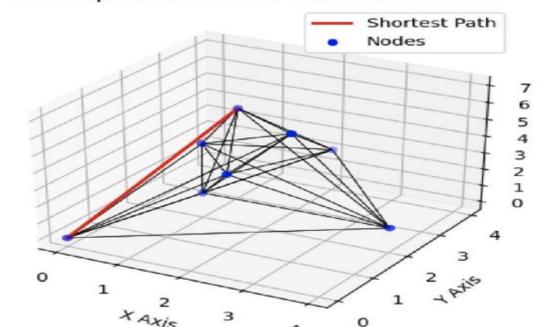
### MDR prototype



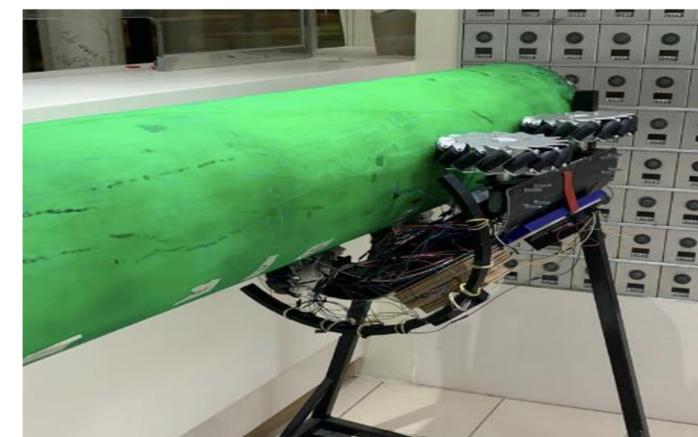
### Final prototype

## Validation

3D Graph Visualization with Shortest Path



Simulating the A\* heuristic across seven points resembling cracks, heuristics guide optical analysis to find the shortest path.



Ensure 360 ° movement as illustrated in the figure.