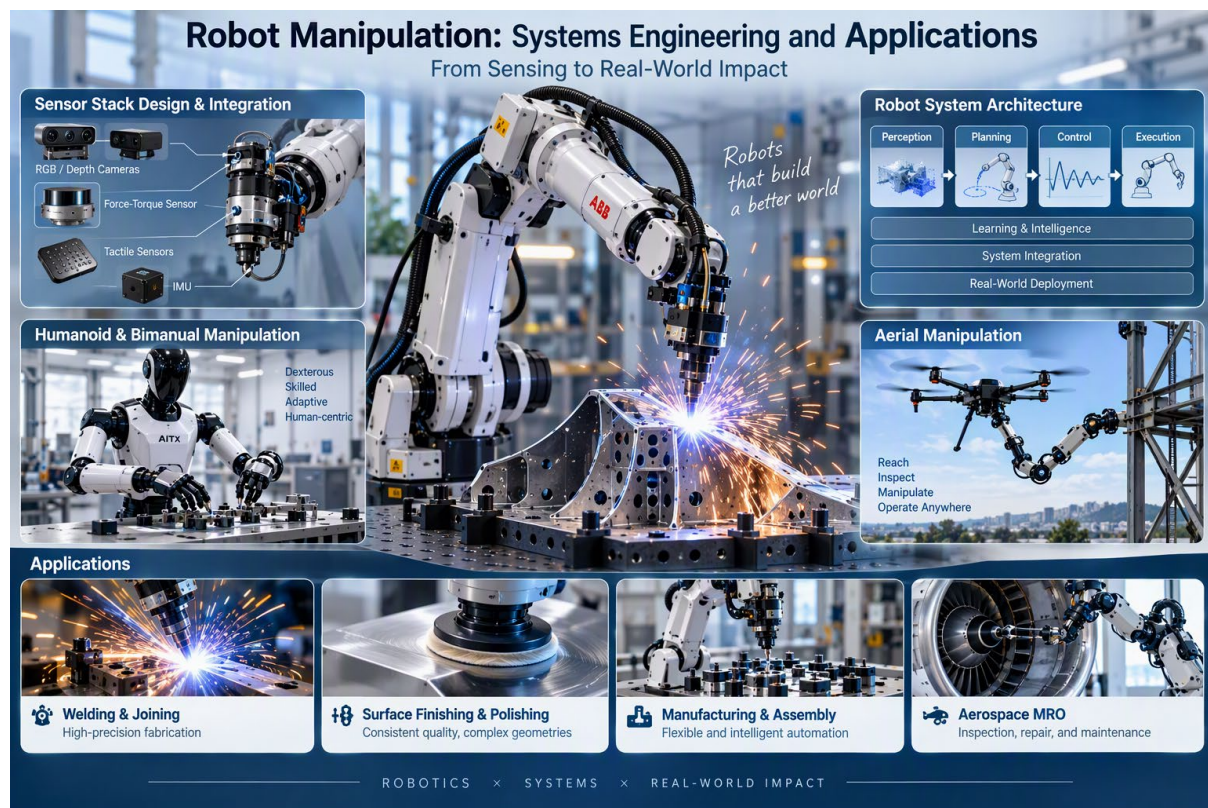


Robot Manipulation: Systems Engineering and Applications



[Credit: Image is generated by AI]

Overview

Robot manipulation is a cornerstone of modern robotics, enabling robots to physically interact with and transform the world around them. While significant progress has been made in perception and learning, deploying manipulation systems in real-world environments requires the integration of reliable hardware, sensing, control, planning, and artificial intelligence.

This research direction focuses on the design and deployment of robotic manipulation systems for industrial and emerging applications. We are interested in combining advanced sensing, mechanical design, controls, machine learning, and systems engineering to create robust robotic platforms capable of operating in complex and unstructured environments.

Research Topics

Examples of topics of interest include, but are not limited to:

- Robotic Welding
- Automated Surface Finishing and Polishing
- Industrial Manipulation Systems
- Humanoid Robot Manipulation

- Aerial Manipulation
- Bimanual Manipulation
- Sensor Stack Design and Integration
- Robot System Architecture

Potential application domains include:

- Welding and Joining Processes
- Surface Finishing and Polishing
- Manufacturing and Assembly
- Aerospace MRO

Prospective Students and Researchers

We welcome highly motivated PhD students and postdoctoral researchers with backgrounds in Robotics, Mechanical Engineering, Electrical Engineering, Computer Science, Control Engineering, Artificial Intelligence, Mechatronics, or related fields.

Candidates interested in this research direction are encouraged to follow the instructions on the PI website and make an application.