

Control system experiments for Performance Evaluation of Six-Axis Master Arm

Abstract

Objectives The master arm is a crucial component in robotics, necessitating precise control to execute tasks effectively in challenging environments. This project focuses on the experiments and testing of control system for a six-axis master arm, aiming to evaluate its performance across various test cases.

Scope:

1. A comprehensive testing framework will be developed to assess the arm's control algorithms under different scenarios, including variable payloads, dynamic obstacles, and varying operational speeds.
2. The project utilizes simulation models and real-world experimentation to evaluate the arm's response to control inputs and disturbances. Key performance indicators such as trajectory accuracy, response time, and stability will be analysed to gauge the effectiveness of different control strategies.
3. Various control techniques, including PID, adaptive control, and machine learning-based methods, will be tested to determine their robustness and adaptability.
4. By systematically exploring these test cases, the project aims to identify optimal control approaches that enhance the master arm's operational efficiency and reliability.

Academic Project Requirements:

1) Required No. of student(s) for academic project: 1

2) Name of course with branch/discipline: B.E./B.Tech. Electronics and Instrumentation Engineering

3) Academic Project duration:

(a) Total academic project duration: 24 Weeks

(b) Student's presence at IPR for academic project work: 4 Full working Days per week

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