BhaiBot Design and Development: A Kinematic-Based Pick-and-Place Robot with Image Processing to Enhance Educational Robotics in the Philippines

Bhai Nhuraisha I. Deplomo
University of Makati, Philippines

Abstract:

This study focuses on constructing a kinematic-based pick-and-place robot, called Bhaibot with an image processing system for instructional purposes. The concept seeks to assess its functionality and efficiency in both industrial and academic settings by utilizing kinematic modeling for precise robotic movements and image processing for object recognition and sorting. The robot uses sensors, actuators, and a camera system to identify colors and forms in real time. The research investigates the mathematical foundations of forward kinematics to ensure precise placement and movement planning. By adding image processing techniques, the robot can accurately sort items, identify colors, and perform pick-and-place actions. Performance evaluations measure precision, functionality, and reliability were demonstrated.

Keywords:

Kinematic, Pick-and-place robot, Image Processing.