

DEVELOPING AUTO CHARGING MECHANISM ON A SCARA ROBOT USING VISION

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT**DEVELOPING AUTO CHARGING MECHANISM ON A SCARA
ROBOT USING VISION**

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The purpose of this thesis is to develop an electrical plug recognition system for auto charging mechanism on a SCARA robot as a model which requires object detection and position estimation algorithms.

The focus of this thesis work is to observe and analyze object recognition system by comparing different object detection methods and applying it in a SCARA robot model, as a representation of charging manipulator in a mobile robot. The problem that needs to be solved is to estimate the position of the electrical plug, and connecting the electrical cord to the plug.

A camera is used to find the electrical plug, and the position of the electrical plug is calculated by using image processing method. Then the robot moves to the detected position based on the detection result and inverse kinematics, preparing a position for charging. The position of the electrical cord must be orthogonal to the electrical plug.

Keyword: Object Recognition, Image Processing, Charging Mechanism, Position Estimation

DEDICATION

I dedicate this thesis to God, who gives His grace and help to allow me completing this thesis, my advisor and co-advisor, my parents, and my friends.



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