

ABSTRACT

In industrial manufacturing, robot arm was widely used for helping production process activities. This is caused the number of work to be performed requires a high level of accuracy and stability. Automation system technology was demanded to applied. So, this final project aims to create a system where the robot arm can determine their own movements in taking objects from the object position information.

On this final project research, was made a position control of robot arm for taking object using camera. The function of camera as a vision sensor. The camera takes a picture frame by frame. Thereafter the result of sampling image would be processed on Visual C++ in computer using OpenCV libraries. That process aimed to detect and obtain the coordinates of the object's position. The obtained coordinate is used as parameters for determine the angle value on every robot arm joint using inverse kinematics calculation.

From the result of the performed test, position control of robot arm that made can take the object with a success rate is 97.619%. The end-effector positioning accuracy is 94.967% for the x-axis and 95.363% for the y-axis. Time needed to take the object until return to the starting position is 9.7 seconds for the 5 rpm's motor speed, 8.41 seconds for the 10 rpm's motor speed, and 7.83 seconds for the 20 rpm's motor speed.

Keyword : Robot arm, Inverse Kinematics , OpenCV, Camera.