

## ***ABSTRACT***

*Physical Disability is a person who has physical limitations such as muscles, bones and joints. It can hinder the mobilization of persons with disabilities, therefore a tool is needed that can help and make it easier for patients. Arm robots are robots that have human-like functions that can help mobilize, especially in picking up goods.*

*In this research, the design of an arm robot that can help patients, especially patients with disabilities, has been carried out by using 3 methods, the first method is voice recognition which is used to give voice commands to robots with the help of Google Assistant. The second method is color segmentation which can be done by converting the RGB image to the HSV image so that the segmentation can divide the image into the areas it owns. The third method is inverse kinematics which is used to convert coordinate points into servo angles so that they can reach objects to be taken automatically. The robot arm has been able to achieve a 100% success rate with an average time required to complete a mission of 28.675 seconds. The use of Google Assistant is able to receive commands with a success rate of 96.97% and servo 1 error is  $3.18^\circ$  with an accuracy of 97.69%, servo error 2 is  $11.99^\circ$  with an accuracy of 89.57%, and error servo 3 is  $18.81^\circ$  with an accuracy of 88%. In order for detection to run smoothly, it must be supported with a minimum lighting of 100 lux.*

***Keywords:*** *Google Assistant, arm robot, color segmentation, inverse kinematics*