ABSTRACT

Robotics technology has widely applied and developed in various fields, one of them is in the rehabilitation field. Assistive Social Robot is a technology that is created to generate a robot system that can interact effectively with users to provide assistance and improve progress in recovery or rehabilitation such as accessibility when taking an object using a robotic arm system. Camera is the most visual sensor that has been applied to detect the position of the object because it has a large working area. In this research, a control of robotic arm system has been designed to detect the position of an object and to estimate the distance of the object by using a camera. The system is applied to retrieve an object that has been selected previously by the user on the screen. On the image processing in this research, contour detection and Kalman filter have been used to optimize the detection process of the object position. Data of the position and distance are used to organizing the control of the robotic arm movement, that has been modified with a gripper as gripping tool in the prototype of assistive social robot, when robot taking an object on the table. From the test that has been done, the robotic arm system can take the object with the success rate in 71.42%, whereas the time rate which is needed to take the object from distance 21 cm until to the end position is 28.05 seconds.

Keywords : Assistive Social Robot, image processing, robotic arm, visual sensor
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