

ABSTRACT

The implementation of the mechatronic system is proven to be able to help human life. The rapid development of mechatronic system technology allows its implementation not only in the industrial sector, but also can be implemented in the game sector such as air hockey game. The implementation of the mechatronic system in air hockey game can be in form of making a robot on one side as an opponent. The robot is expected to be able to accurately responsive to the arrival of the puck (ball). The problem in this topic is how the robot can detect the puck and move the paddle towards the puck to hit back to the opponent's side. Because if the problem is not solved, then the robot cannot hit the puck properly and quickly. This research aimed to design a robot movement on air hockey game by performing image processing by blob detection in order to detect the position and movement of the puck and implement fuzzy logic control method on two identical DC stepper motors that have been connected to a paddle in the Y field.

The robot succeeded in detecting the position of the puck and paddle using the blob detection method with an accuracy rate of 93%. The implementation of the fuzzy logic controller is able to make the robot respond to the arrival of the puck which has a maximum speed of 2.04 m/s and return it with a maximum speed of 2.27 m/s in less than 1 second.

Keywords: Air hockey robot, fuzzy logic controller (FLC), image processing, blob detection.