

ABSTRACT

Robotic School of Applied Science (SAS) in one of the participants in Kontes Robot Indonesia (KRI) category Kontes Robot Sepak Bola Indonesia (KRSBI) Beroda. Wheeled soccer robot is expected to has the ability to detect the position of the ball. For wheeled soccer robot to do this, wheeled soccer robot need a robotic vision system. Robotic vision system in question is a robotic vision system that has a coverage angle of 360° (omnidirectional) in capturing surrounding images, the robotic vision system consists of a camera and convex mirror.

Based on this the writer conducted research related to design of robotic vision system for wheeled soccer robot robotic school of applied science (SAS) and create a ball position detection program.

The results of this research : 1. The process of design a robotic vision system is carried out in several stages, namely : a) determining the camera and the type of convex mirror, b) doing calculations to get the convex mirror equation, c) design of convex mirror using the 2016 solidworks application, d) simulation convex mirror using the 2.82 blender application, e) design of convex mirror holder, support, camera holder using the 2016 solidworks application, f) fabrication convex mirror, convex mirror holder, support, camera holder, g) testing and analysis. 2. The Robotic vision system has a coverage angle of 360° in capturing surrounding images. 3. The ball position detection program is made using the Python programming language and the OpenCV library. The program can be used to detect the position of the ball in the image captured by the robotic vision system. The position of the ball in the image captured by the robotic vision system can be detected at a maximum distance of 900cm. The program can be used to detect the position of the ball on the field with an average error of 8.22% for the x coordinate and 1.91% for the y coordinate. The program has a speed of 1/16,803 seconds/frame in detecting the ball position.

Keywords: *Robotic Vision System, Wheeled Soccer Robot, Ball Position Detection.*