

ABSTRACT

Wheeled soccer robot is one of the categories contested at the national and international levels. The wheeled soccer robot must have the ability to know the position when on the playing field. Positioning or localization and navigation are very important in wheeled soccer robots. The localization system aims to assist the robot in knowing the position when it moves automatically while on the playing field. The localization system applied uses the Odometry method to determine the displacement or distance of the robot based on the rotation of the Rotary Encoder and is equipped with a Gyroscope sensor. In determining the position of this robot, the Rotary Encoder sensor will send a digital signal to the microcontroller so that it produces an output in the form of a pulse which is then translated into the form of x and y coordinates. While the Gyroscope sensor will produce output in the form of the theta angle of the yaw axis on the Gyroscope to determine the direction of the robot. The navigation and localization systems are connected by a Robot Operating System framework that is integrated with other systems. Based on the test results, the robot can move according to navigation commands in the field and can determine the position in the field with an error of ± 20 cm on the x-axis and y-axis.

Keywords: Rotary Encoder, Gyroscope, Navigation, Localization, Odometry