ABSTRACT

Localization systems which generally use GPS are less effective when used for indoor mobile robots. One alternative is to use Visible Light Communication (VLC) technology by utilizing LED lights in the room. A Localization system is very necessary to know the position and location of the mobile robot while operating. In this final project, a localization system based on VLC is designed. The data used are lighting lamps that transmit light containing the identity of the lamp to the photodiode. The photodiode will capture the light of the LED lamp which contains identifying information. The resulting data is then processed using Arduino. The output is in the form of location information displayed on the LED indicator. The results of the tests carried out by the transmitter can send information signals according to the programmed identity. The receiver can obtain the identity of the LED light and the output is 80% accurate receiver location information. The best distance between transmitter and receiver in VLC communication using a 20watt LED is 20 to 100cm. The maximum range of each lamp is in the range of 32x32 cm^2 and the blind spot of each zone is in the range of 34x34 cm^2 hingga 40x40 cm^2.

Keywords*: Localization System, Visible Light Communication, LED Lamp, and Photodiode*