

ABSTRACT

Blind person is a term used for people with some abnormality on their sight. Disturbances in vision can mean totally blind or partially blind (Low Vision). For the visually impaired who are totally blind, it is important to have a tool which functions as the basic vision is to see and determine the distance from users to his surrounding objects.

The tools usually used are called blind-canes. This cane actually holds lots of potentials to add several technologies attached to it, to help the blind people better. In this final project, the blind cane received additional three ultrasonic sensors attached to its front part, and use *DC* motor and buzzer as outputs. First, the system will read input from ultrasonic sensors and then converted the value into distance, which then enter a process of Fuzzy logic controller. The output of Fuzzy is the Motor *DC*'s PWM which control its speed based on the distance from the user, so that the vibration marks differently from every distance. The buzzer serves a function to make a certain frequency based on the object position toward the user.

Based on the analysis of this project, the system is able to detect obstacles from left, front and right, up to 1,8 metre in distance. The fuzzy logic is also successful giving a different vibration strength based on the distance from obstacle to the user. This tool can last for 3.5 hours of continuous use using a 9v battery. The ultrasonic sensors used have an error percentage of 6,22% with the maximum error percentage is 10,9%. After being tested to the blind people, this tool has comfort rating of 80%, satisfaction toward its weight 80%, easy to understand rating 80%, easiness to use 40% and usefulness rating 100%. However, they said that the model of the system is a little clunky and too wide especially on the place where the sensors located.

Keywords: ultrasonic, Arduino, blind person, *Fuzzy* logic, motor *DC*