

ABSTRACT

The application of the technology is now a lot of touching various aspects of human life. One such aspect is industrial or residential property. Sample technologies are used in the property industry is an automatic garage. Application of automatic garage in the existing housing in Indonesia is currently limited to the garage which is just opening or closing the garage door. The application of this technology does not solve the problem of limited parking space in the house if there is more than one car. One solution that could solve these problems is the automatic garage underground.

On this project, the writer created a lift prototype for underground garage inside a home. The system works when the car arrives, lifts will move up from underground and wait until the car enters the lift. After the driver left the car, lift will move down and take the car to the underground garage. The system uses proximity sensor and load cell sensor and uses dc motor as actuator. PID method is used on this project to stabilize the lift movement.

This project made some conclusions like the system could only park one vehicle due to low roof restrictions. Algorithm used in the system comes with Arduino and PID controller method. Ultrasonic sensor tests have error value of $\pm 1,13\%$. While proximity sensor have error value of $\pm 8,25\%$. This system uses calibration constant of -175. This number can be acquired by giving a certain number until the mass that showed up in monitor matches with the real mass of vehicle used. With PID, the system can move smoothly with rising setpoint of 25cm and low setpoint of 7cm.

Keywords: lift, proximity, load cell, Ultrasonic, PID