ABSTRACT

The development of robot technology at this time is very influential for the life of millennial society today. Especially in the field of robots that are developing and are always being used for their contribution to be solutions to problem solving. Especially the roles and functions of robots that are required to facilitate human work are important, because in this day and age many human jobs can be replaced by robots, one of which is a mobile robot with an autonomous system, a robot that can move on its own with a system that has been set and regulated in such a way way to save time and efficiency.

This final project implements a system for mobile robots to move according to a predetermined path and the selection of the shortest path route. The system is a robot that can move automatically based on path planning and routes that have been determined and guided by VLC technology. The piloting process uses a series of LED lights as a signal sender and a photodiode as a navigation data receiver. In previous studies, the same system has been implemented by using a distance of 80cm from the transmitter to the receiver and designing the right transmitter, a lamp with power that supports the process of sending data, so that the robot can move based on the coordinates of the lights sent by the LED and detected by the photodiode. and processed into the A algorithm.*

The robot that is applied in this final project can detect the light signal sent by the LED and receive realtime coordinate data with an average of 1.76 seconds, the robot moves with the position and purpose set from the lamp with an average error value of 4.35%. and the distance difference is 2.98 cm from the initial distance, the search for the shortest route can be done directly by using the VLC concept and the layout of the path that has been determined. Battery capacity is also very influential on the speed of the robot with the use of 16V to 14.5V. The results of this final project can be seen that path planning with VLC can be implemented in mobile robots in the world of industry, health, etc.

Key Word* : *Visible Light Communication, Mobile robot, Path planning, Algorithm A*