

## ABSTRACT

The Indoor Positioning System using mobile devices such as smartphones is a challenging issue, such as GPS that does not work accurately inside buildings, enclosed spaces and under ground spaces , one of them warehouse especially WIFI signal that sometimes does not spread evenly throughout the room. GPS has an accuracy in meters, with an accuracy that is not suitable to be implemented in including warehousing.

Because of the GPS system is not reliable for positioning system then, in this Final Project will be implementation of positioning system using *visible light communication* on warehouse to make become smart warehouse. Integration between VLC and localization system can be a solution with regard to internet limitations in reaching an area. Mapping locations such as underground rooms, high rise buildings and large areas can be overcome by indoor localization system. In this Final Project, the sending side consists of four LED lights which will be a VLC system that works like cartesian coordinates and each lamp has a different LED ID or coordinates. Whereas on the receiving side, it consists of a prototype robot car mounted on 5 *photodetector* which are placed on the top, bottom, right, left the side of the car robot. The prototype robot car will know the position and will read the message sent by the *transmitter*, and the robot car will move according to the desired command.

The results of the design of this tool can prove that with a positioning system using the best VLC percentage inaccuracy of position is 0.41% and the worst percentage of inaccuracy is 8.14%. The minimum value of lux when the photodetector reads the data is 16 lux.

**Keywords: Positioning System, VLC, LED, ID / Coordinate LED, Robot Car Prototype, Smart Warehouse.**