

## **ABSTRACT**

The rising number of vehicles causes fuel consumption to increase. The difference from an electric cars with a fueled one is in the way of charging which tends to be slow. The lack of time efficiency to recharge electric cars becomes a serious problem that is still being developed and the ways to solve the problem are sought.

Automation in replacing the charging operator of electric cars is one of the practical solutions to a more efficient charging time of electric cars. This robot arm works when the car comes to the charging terminal and the battery capacity percentage of the car is not full. The inverse kinematics method is useful in the movement of the robotic arm that will search for the charging terminal and start recharging the cars. When the car's battery is full, the robot's arm will return to its original place.

The application of image processing in distance measurement and shift value calculation obtains a high accuracy rate at 90% - 100%, meanwhile the accuracy of angle shift with invers kinematics method has 78% - 100% rate. the result of those methods application is a high accuracy rate robot system in inserting and removing robot arms at charging station.

**Keywords :** arm robot, image processing, socket, *servo* motor, DC motor, OpenCV, *inverse kinematic*