ABSTRACT

The parking area is a site for placing and entrusting vehicles. With the growing number of vehicles, the available parking slot in public areas (shopping mall, airport, station, and others) is becoming rare in terms of capacity. To facilitate the driver in finding a parking slot, a system and its corresponding appliance are needed to solve the problem. Therefore, this research is designing the application and tools to arrange parking slot reservations to make the driver easier for getting the parking slot.

This architecture includes hardware and Internet of Things connection with the created apps. The tools are created using Arduino Uno, buzzer, and servo motor. The components are located at the automatic doorstop. To initiate the parking system application, Android Studio and database storage system using the web database, namely Firebase, are needed. The application can be used as the parking slot reservation, and to open the automatic doorstop, need the QR code obtained from the application after booking operation. This system works with ESP32 CAM to scan the QR code received by the driver from the application. The application has some features, such as parking history, parking location, parking reservation (date, time, and slot), and profile update (name, contact, address). This application has admin to control parking slots (parking history, ongoing parking, location settings, and parking percentage.

From the testing stage, the smart parking system has a Throughput rate of 61292 bps. The delay total of ESP32 CAM with Firebase is 193.762 ms. This research is expected that smart parking is able to help the drivers to find parking slots easier.

Keywords: *Internet of Things, Smart parking,* ESP32 CAM