

### iii. ABSTRACT

As we know the parking area is a place to place and leave vehicles. With the increase in the number of vehicles, parking slots available in public areas are becoming scarce in terms of capacity. To make it easier for drivers to find parking slots, we need an appropriate system and device to solve the problem. Therefore, this study designs applications and tools to manage parking slot reservations so that drivers can find parking slots more easily.

This design includes hardware and Internet of Things connection with the applications created. To make a parking system application, you need Android Studio and a database storage system using a web database, namely Firebase. The application can be used as a parking slot reservation, and to open the automatic doorstop, requires a QR code obtained from the application after the booking operation. The tool is made using Arduino Uno, buzzer, and servo motor. The components are located on the automatic doorstop. The system works with the ESP32 CAM to scan the QR code received by the driver from the app. This application has several features, such as parking history, parking location, parking reservation (date, time and slot), and profile updates (name, contact, address). This app has admin to control parking slots (parking history, parking in progress, location setting and parking percentage).

From the test results, the smart parking system has a Packet Loss speed of 2.67%. The total delay of ESP32 CAM with Firebase is 193,762 ms. This research hopes that smart parking can help drivers to get parking slots easily.

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