# ABSTRACT

System security is a policy measure to secure a system that is designed to monitor, prevent, and respond to intrusions from other people who are not system owners. Security systems are also used to protect a person's physical assets such as houses, motorbikes, and other physical assets that can be taken by someone who is not responsible.

In this project the security system that will be used is face recognition and a smartphone app whose database is connected in real time. The application of a security system in this project uses a motorbike as the object of applying a security system. This security system requires authentication of a person's face first so that it is in the system, and if a person's face that is not authenticated in the system will not work, when a person whose face has been detected in the system when that person wants to turn on his motorbike then it will require authentication of the person's face it's on the camera installed on the motorbike, when the face is correctly detected then the 2nd authentication uses a smartphone to ensure that the user is the person who is registered correctly in the system, if the person whose face is not registered then the relay will turn on the alarm / horn so that the motorbike owner can know when a thief is trying to take the motorbike.

The purpose of this final project research is to add security authentication to existing motorbikes by adding a Microcontroller, Pi Camera and Smartphone Application which are useful for reducing the theft rate on motorcycles. In the tests that have been carried out data communication between the Microcontroller and the Smartphone Application has been successful by using Firebase as a bridge between the two devices. The ideal level of accuracy for face detection in this system is 20 cm to 80 cm because it has an accuracy rate of 100% when detecting. At the success rate of face recognition, several factors can affect the value of face recognition accuracy, namely the position of the light, the level of lighting, and the distance of the face. In the test, the average success value of face recognition was 93.34%.

**Key Word : System Security , Face Recognition , Smartphone app ,  Sepeda motor**