ABSTRACT

In 2017, the government launched the 100 Smart City program. Smart City is a concept for developing a city/district using information technology and the Internet of Things (IoT). One of the IoT implementations that also supports the development of Smart City and can be used to reduce crime is Face Recognition-based home security technology. The development of Face Recognition technology has been increasingly rapid during the COVID-19 pandemic, which at that time required people to wear masks. At that time, Face Recognition technology faced the challenge of being able to read more accurately facial captures accompanied by other attributes in certain areas such as glasses, masks, hats, and others. One of the biggest challenges of face recognition technology is accuracy.

The method used in this research is a literature study on theories related to Microcontrollers, IoT technology, and Eigenface technology on cameras. This study also provides a system design, develop a prototype, system testing, and analysis of test results.

The results of the research showed that the Home Security system design using ESP32 Camera, Arduino, and Phyton is an effective design for identifying the face of the homeowner. The accuracy level of testing at the Low Lighting Level reached 100%. The accuracy level of homeowner facial identification reached 94%, while facial identification of unknown people reached 100%.

Keywords: *Smart Home, Internet of Things, ESP32 Camera, Face Recognition.*