

UNIVERSITI TEKNOLOGI MARA

**AUTOMATED ACCESS OF LABORATORY
SYSTEM USING IOT-BASED FACE
RECOGNITION**

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STUDENT'S DECLARATION

I certify that this thesis and the project to which it refers is the product of my own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

Currently, laboratory door are unlocked by using the manual ways such as using the keys, security cards or passwords. Unfortunately, this system is not fully secured as the technologies nowadays have been upgraded and become more sophisticated. Old system tend to have some insufficiencies that are likely to be stolen by unauthorized parties or forgotten by the owners. The main objective of this research is to heighten the safety of the door of sensitive places through face detection. Face is known as a multidimensional form and it needs accurate computing techniques for detection and recognition. Face detection is known as a way of detection, the vicinity of face in an image. Face detection is commonly detected through the use of the face popularity where it is achieved together with the help of the usage of the Principle Component Analysis (PCA). Face recognition is primarily based on PCA which normally uses Eigen faces. In addition, together with a purpose to accomplish a better accuracy and effectiveness at ease, this research proposes OpenCV libraries and Python computer language for face recognition. Training and identity can be done and accomplished in an embedded tool called Raspberry Pi. This is a prototype that can identify the persons. The methodology of the study involved three phases which include system design, functionality test, and usability test. The first phase was system design which involved system visualization and design of prototype using a schematic diagram. Then, the functionality of the prototype was tested using a Test Case method. Another evaluation consists of gaining a response from 2 expert panels from UiTM staff about the system understanding, usefulness and effectiveness via a usability test. The usability study requires the response to watching the demonstration of the prototype, using the prototype and answer the questionnaires. The result from the study suggests that the prototype is suitable to be used.

Keywords: Face Recognition, IoT, Raspberry Pi, Eigen faces, Principle Component Analysis (PCA), OpenCV, Python.

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