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INVENTION AND INNOVATION EXHIBITION

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## **2023**

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INVENTION AND INNOVATION EXHIBITION (I-JaMCSIIIX) 2023

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**Wednesday**

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## 2023

INTERNATIONAL JASIN MULTIMEDIA & COMPUTER SCIENCE  
INVENTION AND INNOVATION EXHIBITION (I-JaMCSIIx) 2023

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# PANTAU: Smart Intruder Detection from Video Surveillance Using Deep Learning

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**Abstract**—Video surveillance or closed-circuit television (CCTV) is a well-known technology that have been used in many areas including at house area. For example, house owners installed this technology for the purpose to record video and monitor within the perimeter of the house area. However, the existing system is incapable to distinguish between the house owner and other unknown people. Moreover, if there is any violation or damaged happens, the authority still needs to analyze each footage in order to identify the culprit. This manual process is time consuming and requires a lot of effort. Hence, this project introduces PANTAU, a smart intruder detection system that can distinguish between the house owner and unknown people, record a specific chunk of footage whenever intruder is detected and send notification to the house owner about the incident. This smart intruder detection system applies two deep learning models. The first model is an EfficientDet model which is an object detection model uses for detecting person. Second model is a MobileNets model which is an image classification model for performing figure recognition of the house owner. Both models are based on the Convolutional Neural Network (CNN) model. These models are loaded into a Raspberry Pi (Pi) to act as the video surveillance and perform detection together with classification. If intruder detected, notification will be sent to the house owner and a short video of the incident will be recorded. The houseowner can view the recorded video through a web application. Based on the testing performed, this system passes all use cases of the functionality testing. On accuracy testing, the object detection model achieved average precision (AP) of 76% which is considered good. As for image classification model, the accuracy achieved is 85.71%. Based on the results achieved, the developed PANTAU, a Smart Intruder Detection System is able to perform intruder detection effectively.

**Keywords**—intruder detection, video surveillance, EfficientDet, MobileNets



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