

SECURITY SYSTEM FOR IDENTIFYING HUMANDS AND ANIMALS IN LOW LIGHT CONDITIONS

Buddhi Wickramasinghe

A dissertation submitted in partial fulfilment of the requirement for
Bachelor of Engineering (Honours) degree in Software Engineering

Department of Computing

Informatics Institute of Technology, Sri Lanka

in collaboration with

University of Westminster, UK

2018

Abstract

Security is one of most important things for every institution. Specially in financial institutions it is mandatory to have good security system. Most of the financial institution in Sri Lanka have very basic and old security system which is identify unauthorized access during the institution closed hours. Main reason not use good security system is there isn't a good commercial level security system in Sri Lankan market.

The proposed system provides an advanced security system for the financial institutions to improve the inside security of the financial institutions during the institutions closed hours. The solution will detect the unauthorized access and detect the type of the detected moving object, then it will fire the system security alarm and notify the respective parties. When it notifies to respective parties it will send the captured image of the detected moving object, the type of the moving object and it will facilitate to stop the firing security alarm using it is web-based application or mobile application. So, when the security alarm get fired, the respective parties can get to know that exactly what cause to fire the security alarm, It will useful for the respective parties to get prepare before entering to the suspected area and it will prevent being stressed unnecessarily.

The proposed solution uses Optical flow to detect the moving objects, DnCNN to remove the gaussian noise in captured images and Faster-CNN to detect the type of the captured moving object in real-time. The solution system is able to detect the very small to large moving objects and the implemented prototype is capable to identify mouse, people and people with wearing helmets in different lighting conditions.

Functional and structural testing has been done to test the system. The test results and evaluated results proves that the system accuracy is much enough for commercial level system. A critical evaluation process is proceeded with different evaluation criteria with different evaluation groups. The proceeded evaluation is useful to identify the strengths, drawbacks enhancements of the project.

Subject Descriptors: Optical Flow, DnCNN, Faster R-CNN, CNN, Deep Learning