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BEng/BEng. (Hons) in Software Engineering

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**IMAGE PROCESSING BASED RESIDENTIAL THREAT DETECTION
SYSTEM**

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Abstract

The lack of intelligent surveillance system in order to identify threats such as burglary and intrusions in residential environment became a major problem in our society. Currently implemented systems for residential usage can only provide support post incident occurrence. Which puts residents lives in danger. This research analyzes how identified domain can address with using software components rather than hardware integration.

A practical solution for the described problem was created using python, computer vision and deep learning techniques. It describes a subsystem which depends on the installed surveillance system. The surveillance footage os surveillance system will used for this implemented solution and based on the footage continuous real time detection will take place. In case of intrusion subsystem will triggered and it will communicate with residents as the next stage.

Results were generated using mock data such as staged scenarios. System successfully triggered on intrusion and identified the intruder and objects that intruder carries with him by generating and assigning bounding boxes over them for visualization. Subsequently the users of implemented system get notified when intrusion occurs in their residential environments

Following research project emphasize the need of surveillance system for residential environments which is capable of identifying potential threats before it takes place.

Keywords— Python, Computer Vision, Deep Learning, Surveillance, Bounding box