

## Residential Intrusion Detection System Using Face Recognition

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### ABSTRACT

Lifestyle in the modern society along with human behavior and thinking is changing dramatically with the advancement of technology, and the concept of a simple home is changing into a smart home. Home Security has been a major issue where crime is increasing and everybody wants to take proper measure to prevent intrusion, besides homes the system is also implemented in business premises and office. This project is residential intrusion detection and it detects the face by using image processing.

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### Introduction

Security is the degree of protection against danger, damage, loss or any criminal activity. It is very important, because crime rate is increasing day by day. An automated home security system, just like car, has become one of our basic needs. Due to work constraints, people are spending more and more time away from their homes.

Most homes are now equipped with state-of-the-art technological devices like Digital Tv's, Digital cameras or camcorders, smart refrigerators, washing machines, etc.. The busy lifestyle of people is leading to the necessity of controlling the devices at home remotely and increasing the necessity of keeping surveillance over their homes.

### Camera

A camera is an optical instrument to capture still images or to record moving images, which are stored in a physical medium such as in a digital system or on photographic film. A camera consists of a lens which focuses light from the scene, and a camera body which holds the image capture mechanism.

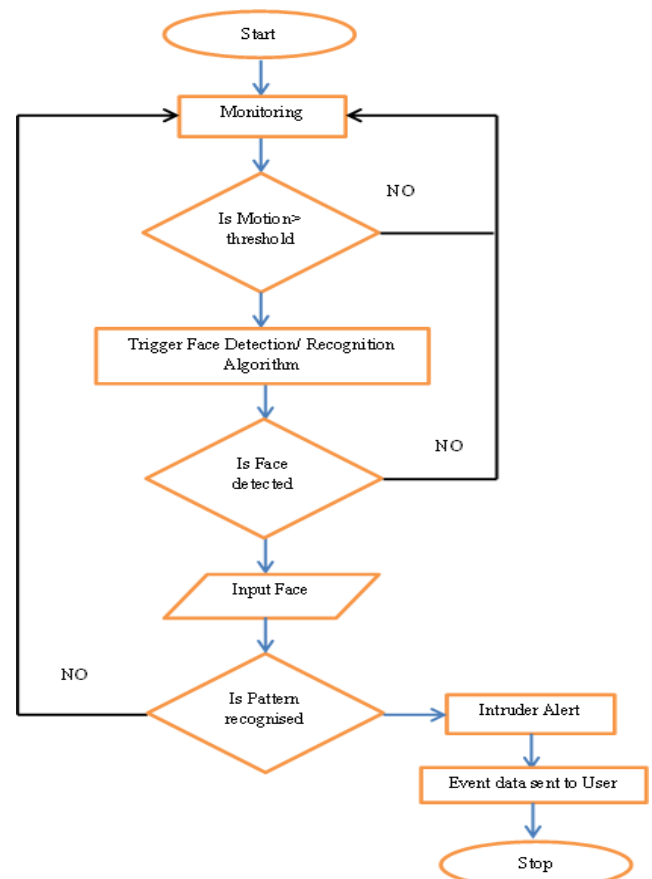
Television camera (CCTV camera) can produce images or recordings for surveillance or other private purposes. Cameras can be either video cameras, or digital. CCTVs have become ubiquitous in their surveillance tasks and are efficiently performing monitoring of areas to ensure the security of the public. In the UK alone, it is estimated that there are about 4.2 million CCTV cameras for a population of 62.2 million. They have successfully been used in many places such as for traffic monitoring, maintaining law and order, monitoring of chemical processes in production control in various types of industries, etc. They are also very common in shops, department stores, supermarkets, hypermarkets and shopping malls where they have successfully been used to detect suspicious behavior, shop lifting and robberies. They have also proved to be very useful in places where there are huge crowds such as in stadiums.

### Image Processing

Digital image processing is the use of computer algorithms to perform image processing on digital

images.<sup>[1]</sup> As a subcategory or field of digital signal processing, digital image processing has many advantages over analog image processing. It allows a much wider range of algorithms to be applied to the input data and can avoid problems such as the build-up of noise and signal distortion during processing. Since images are defined over two dimensions (perhaps more) digital image processing may be modeled in the form of multidimensional systems.

### FLOWCHART



Different steps involved in image processing include importing the image with an optical scanner or from a digital camera, analysing and manipulating the image (data compression, image enhancement and filtering), and generating the desired output image.

The need to extract information from images and interpret their content has been the driving factor in the development of image processing. Image processing finds use in numerous sectors, including medicine, industry, military, consumer electronics and so on.

#### **NetBeans**

The NetBeans Platform is a framework for simplifying the development of Java Swing desktop applications. The NetBeans IDE bundle for Java SE contains what is needed to start developing NetBeans plugins and NetBeans Platform based applications; no additional SDK is required.

Applications can install modules dynamically. Any application can include the Update Centre module to allow users of the application to download digitally signed upgrades and new features directly into the running application. Reinstalling an upgrade or a new release does not force users to download the entire application again.

The NetBeans JavaScript editor provides extended support for JavaScript, Ajax, and CSS.[20][21]

JavaScript editor features comprise syntax highlighting, refactoring, code completion for native objects and functions, generation of JavaScript class skeletons, generation of Ajax call backs from a template; and automatic browser compatibility checks.

CSS editor features comprise code completion for styles names, quick navigation through the navigator panel, displaying the CSS rule declaration in a List View and file structure in a Tree View, sorting the outline view by name, type or declaration order (List & Tree), creating rule declarations (Tree only), refactoring a part of a rule name (Tree only).

#### **Conclusion**

The aim of this research was to develop an integrated intruder with face recognition. The face recognition distinguishes between authorized persons and intruders in order to eliminate false alerts. The system has been tested in real-life scenarios and this low-cost home surveillance system shows good performance both during the day and at night when infra-red cameras were used. The system can be improved by adding more cameras so that one is present in each room. However, additional work is required for the face recognition module to increase its recognition ratio and to make it less sensitive to variations in light intensity.

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