

## SUSPICIOUS ACTIVITY DETECTION USING DEEP LEARNING

**Ms. Archana R. Ghuge\*<sup>1</sup>, Mr. Rushikesh S. Wakchaure\*<sup>2</sup>, Mr. Sagar D. Wagh\*<sup>3</sup>,  
Mr. Parag S. Hude\*<sup>4</sup>, Ms. Aishwaraya V. Pingale\*<sup>5</sup>**

\*<sup>1</sup>Guide, Department Of Information Technology, PRES SVIT,  
Nashik, Maharashtra, India.

\*<sup>2,3,4,5</sup>Students, Department Of Information Technology, PRES SVIT,  
Nashik, Maharashtra, India.

### ABSTRACT

Suspicious activities are a problem when it comes to the potential risk it brings to humans. With the rise in criminal activities in urban and suburban areas, it's necessary to detect them to be ready to minimize such events. For a long time the detection of suspicious activities as well as their recognition is done by humans, manually, as suspicious activities are very difficult to label than normal activities. Various approaches were introduced in surveillance, as new surveillance techniques are introduced every day. We are focusing on gun based crimes as well as crime that involve bags, as after a study we found out that this crimes are more in numbers day by day as well as they harm more human and other lives, ignoring of which could lead us to harmful damages. We propose a system which is based on neural network and computer vision pipeline to identify various weapons in images as well as bags that are left abandoned in nature at public place.

**Keywords:** Suspicious, Deep Learning, Neural Network, Computer Vision, Surveillance, Etc.

### I. INTRODUCTION

One of early things little kids learn to recognize and understand are faces. Faces simple yet extremely difficult characteristic of any creature. A feature that help us to identify people around us, our family, our friends, in some cases our enemies. If we ask a kid what a Face is, it's pretty simple for them to describe, as a face is combination of 2 eyes, 1 nose, 2 ears, 2 lips, 1 forehead & some other features. According to scientific research we are not quite sure how we identify faces in first place, whether inner features or outer features contributor in this process. A study shows that special cells of our brain gets active on getting specific visual information such as edges, corners, shades, etc. Faces are also a crucial part for our society as they can help us to survive by classifying between potential threats, or say criminals/suspects. For a long time Justice system relies on face recognition whether it is suspects sketches from eye witnesses, suspect identification from CCTV Footage. For a long time this work is done manually by people, but now in the age of AI and Technology people are trusting on Intelligent Machines to perform this task. In this paper we are proposing a system which is a combination of Two modules, first one is Suspect Identification using Convolutional Neural Network, second one is also relying on CNN which is weapon detection, such as knives, arms & ammunition.

### II. MOTIVATION

Today as the technology is in rise, & people are getting more and more alert and knowledge rate of success, peace is also rising, but, rate of crimes is not decreasing as it should be in any civilized society, Today we have technology that is faster, safer, accurate and trustworthy, we can use our technology to solve some of our problems related to crime, our motivation is to try to use what we know as well as try to contribute in a modern society to solve some of our major problems related to crime in specific, We are concentrating mostly on face recognition for criminal databases to find out potential criminals, suspects with the help of day to day video surveillance, we are also focusing on suspicious activities in public areas such as armed persons, luggage without any authority.

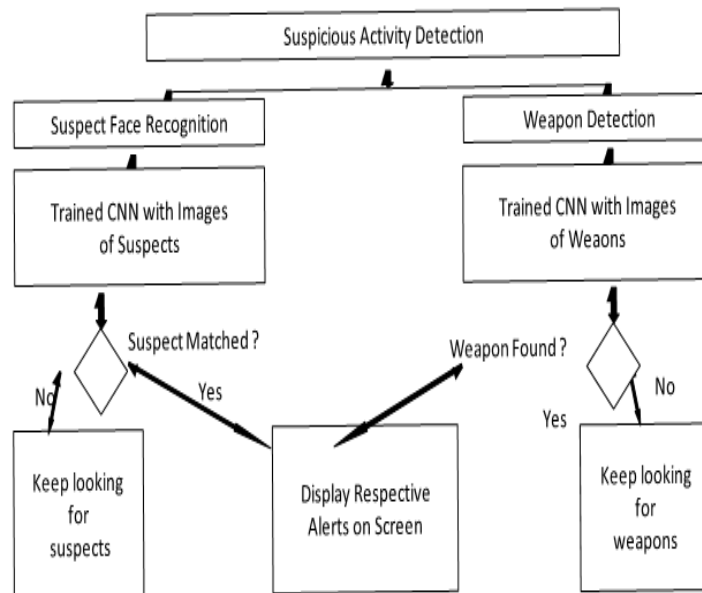
### III. LITERATURE SURVEY

When it comes to the potential harm that suspicious activities provide to humans, they constitute an issue. With the rise in criminal activity in urban and suburban regions, it's more important than ever to detect them and prevent them. Surveillance used to be done manually by humans, and it was a taxing work because suspicious events were rare compared to everyday activity. With the introduction of intelligent surveillance systems, different ways to surveillance were created. We concentrate on two cases: detecting probable gun-related

crimes and recognizing abandoned luggage on surveillance film frames, both of which, if ignored, could put human lives at danger. We offer a deep neural network model that can recognize pistols in photos, as well as a machine learning and computer vision pipeline that can recognize abandoned luggage in surveillance footage, in order to identify probable gun-related crime and abandoned luggage situations.[1]

Human conduct that raises suspicion To prevent terrorism, theft, accidents and illegal parking, vandalism, fighting, chain snatching, crime, and other suspicious activities, surveillance video can be used to identify active human activities in sensitive and public areas such as bus stations, railway stations, airports, banks, shopping malls, schools and colleges, parking lots, and roads. Because it is difficult to continuously monitor public spaces, intelligent video surveillance is necessary, which can monitor human actions in real time and categorise them as ordinary or exceptional, as well as create an alarm. A large number of articles in the subject of visual surveillance to detect aberrant actions have been published in the last decade. Furthermore, though there are a few surveys in the literature for recognising diverse abnormal activities, none of them have covered distinct abnormal activities in a comprehensive study. In this paper, we will look upon, We describe the current state of the art, which shows the overall advancement in detecting suspicious activity from surveillance recordings over the last decade. [2]

#### IV. PROPOSED SYSTEM



The principles that will form the backbone of the real system are generated during the systems architecture phase. It's a mental model that represents the structure and behavior of a proposed or existing system. A system architecture, also known as systems architecture, is a conceptual model that defines a system's structure, behavior, and other aspects.[1]

A formal description and representation of a system arranged in a way that facilitates reasoning about the system's structures and behaviors is known as an architecture description. A system architecture can be made up of created system components and sub-systems that will work together to accomplish the overall system. Software architecture is a shared abstraction of a system that may be used as a basis for mutual understanding, negotiation, consensus, and communication by most, if not all, of the system's stakeholders. It's also the earliest

moment at which the design decisions that will control the system's construction can be scrutinized. The System Design's objective is to enhance the system architecture by giving knowledge and data that is valuable and necessary for the system elements to be implemented.

## V. RESULT DISCUSSION

We tried various algorithms from various references and following are some results that we got from our trials,



## VI. CONCLUSION

We proposed strategies for analyzing surveillance film in the context of two specific cases: detecting probable gun-related criminality and discovering abandoned luggage. We introduce a deep neural network that can identify weapons in images to detect weapons in surveillance footage. This is especially relevant in light of the reduced risk to human life if the models were integrated into existing systems.

## VII. REFERENCES

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