

## DETECTION AND PREDICTION OF TERRORIST ACTIVITIES AND THREATENING EVENTS IN TWITTER – A SURVEY

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### Abstract

Twitter is one of the prominent social media applications which influence civilians due to its fast information dissemination. Researchers have shown that the majority of the tweets posted involve the current issues prevailing in society. Terrorism is a global threat to the peaceful existence of humanity. Terrorists widely use online social media platforms to communicate and propagate their activities. User-to-user interaction leads a major role in the formation of complex communication in the terrorism domain. This paper aims to discuss the different methods in literature used to identify both single and groups of users who are related

to terrorist activities. The study focuses on the different techniques for identifying threatening activities, detecting terrorist attacks and predicting terrorist attacks.

While the use of artificial intelligence (AI) in various fields has garnered significant attention and advancements, its potential application in terrorism activities is a concerning prospect. However, it's crucial to note that discussions on this topic must be approached with terrorism activities like gun fire, fire detection and human fall detection using deep learning of RCNN using yolo algorithm. violence or illegal activities identifying abnormal terrorism in public areas using live camera while AI presents numerous opportunities for innovation and

progress, it also poses unique challenges and risks in the context of terrorism. It is essential to remain vigilant and proactive in addressing these challenges to ensure that AI technology is used for the benefit of society while minimizing potential harm.

## INTRODUCTION

Detecting and addressing terrorism activities around the world using artificial intelligence, particularly through advanced computer vision techniques like You Only Look Once (YOLO), presents a multifaceted approach to enhancing security and counterterrorism efforts. Integrating YOLO-based object detection systems into existing security infrastructure enhances the efficiency and effectiveness of counterterrorism efforts worldwide. By leveraging real-time visual intelligence, authorities can proactively identify and respond to potential threats, safeguarding public safety and preventing terrorist attacks. However, it's crucial to balance

security measures with privacy concerns and ethical considerations to ensure responsible deployment and use of AI technologies in counterterrorism operations.

## LITERATURE REVIEW

### “Real time violence detection in surveillance videos using Convolutional Neural Networks”

Real-time violence detection with the use of surveillance is the process of using live videos to detect violent and irregular behavior. In organizations, they use some potential procedures for recognition the activity in which normal and abnormal activities can be found easily. In this research, multiple key challenges have been incorporated with the existing work and the proposed work contrast. Firstly, violent objects can't be defined manually and then the system needs to deal with the uncertainty. The second step is the availability of label dataset because manually annotation video is an expensive and laborintensive task. There is no such

approach for violence detection with low computation and high accuracy in surveillance environments so far. The Convolutional Neural Network's (CNN) models have been evaluated with the proposed MobileNet model. The MobileNet model has been contrasted with AlexNet, VGG-16, and GoogleNet models. The simulations have been executed using Python from which the accuracy of AlexNet is 88.99 and the loss is 2.480 (%). The accuracy of VGG-16 is 96.49 and loss is 0.1669, the accuracy of GoogleNet is 94.99 and loss is 2.92416 (%). The proposed MobileNet model accuracy is 96.66 and loss is 0.1329 (%). The proposed MobileNet model has shown

### **A real time crime scene intelligent video surveillance systems in violence detection framework using deep learning techniques**

Surveillance system research is now experiencing great expansion. Surveillance cameras put in public locations such as offices, hospitals,

schools, roads, and other locations can be utilised to capture important activities and movements for event prediction, online monitoring, goal-driven analysis, and intrusion detection. This research proposed novel technique in detecting crime scene video surveillance system in real time violence detection using deep learning architectures. Here the aim is to collect the real time crime scene video of surveillance system and extract the features using spatio temporal (ST) technique with Deep Reinforcement neural network (DRNN) based classification technique. The input video has been processed and converted as video frames and from the video frames the features has been extracted and classified. Its purpose is to detect signals of hostility and violence in real time, allowing abnormalities to be distinguished from typical patterns. To validate our system's performance, it is trained as well as tested in large-scale UCF Crime anomaly dataset. The experimental

results reveal that the suggested technique performs well in real-time datasets, with accuracy of 98%, precision of 96%, recall of 80%, and F-1 score of 78%.

### **Real Time Violence Detection in Video”**

We propose a Violent Flow (ViF) variation using Horn-Schunck instead of Iterative Reweighted Least Squares (IRLS) as optical flow algorithm and Support Vector Machine (SVM) as a classifier, we evaluated the performance in different datasets. In Hockey dataset Horn-Schunck had a better performance, but in Movies and Crowded datasets IRLS was better. We also evaluated the computational cost processing two frames, Horn-Schunck had a very low cost of 0.25 seconds against 7.80 seconds of IRLS enabling its use in real time.

### **“Toward Fast and Accurate Violence Detection for Automated Video Surveillance Applications”**

Surveillance cameras are increasingly being used worldwide

due to the proliferation of digital video capturing, storage, and processing technologies. However, the large volume of video data generated makes it difficult for humans to perform real-time analysis, and even manual approaches can result in delayed detection of events. Automatic violence detection in surveillance footage has therefore gained significant attention in the scientific community as a way to address this challenge. With the advancement of machine learning algorithms, automatic video recognition tasks such as violence detection have become increasingly feasible. In this study, we investigate the use of smart networks that model the dynamic relationships between actors and/or objects using 3D convolutions to capture both the spatial and temporal structure of the data. We also leverage the knowledge learned by a pre-trained action recognition model for efficient and accurate violence detection in surveillance footage. We

extend and evaluate several public datasets featuring diverse and challenging video content to assess the effectiveness of our proposed methods. Our results show that our approach outperforms state-of-the-art methods, achieving approximately a 2% improvement in accuracy with fewer model parameters. Additionally, our experiments demonstrate the robustness of our approach under common compression artifacts encountered in remote server processing applications.

### **“Violence Detection in Surveillance Videos”**

Violence-related instances have recently surged dramatically in areas such remote roads, footpaths, shopping malls, elevators, sports stadiums, and liquor stores, which are tragically discovered only after it is too late. Our project's goal is to develop a complete system capable of real-time video analysis, which will aid in detecting the presence of any violent acts. We achieved an

efficient solution that can be used for real-time analysis of video footage so that the concerned authority can monitor the situation. We have put forward a deep neural network for significant detection accuracy. A Convolutional Neural Network (CNN) is utilized to separate frame level highlights from a video which are then accumulated utilizing a variation of Long Short-Term Memory (LSTM) that utilizes convolutional entryways. CNN and LSTM are together utilized for the investigation of nearby movement in a video

### **EXISTING SYSTEM**

- Support Vector Machine
- Artificial Neural Network
- Manual Analysis

Support Vector Machine or SVM is one of the most popular Supervised Learning algorithms, which is used for Classification as well as Regression problems. However, primarily, it is used for Classification problems in Machine Learning.

The goal of the SVM algorithm is to create the best line or decision boundary that can segregate n-dimensional space into classes so that we can easily put the new data point in the correct category in the future. This best decision boundary is called a hyperplane.

SVM chooses the extreme points/vectors that help in creating the hyperplane. These extreme cases are called as support vectors, and hence algorithm is termed as Support Vector Machine. Consider the below diagram in which there are two different categories that are classified using a decision boundary or hyperplane:

#### **Drawback in Existing System**

- Less Accuracy
- Less Feature's
- Here it won't detect the violence properly for terror activities

#### **Proposed System**

- **Convolution neural network**

A Convolutional Neural Network (CNN) is a type of deep learning model particularly well-suited for processing grid-like data such as images. It employs convolutional layers that apply filters to the input to capture spatial hierarchies and features like edges, textures, and shapes. This layered approach allows CNNs to automatically and adaptively learn spatial hierarchies of features from low-level to high-level representations. Common components of CNNs include convolutional layers, pooling layers for down-sampling, and fully connected layers for classification. CNNs are widely used in image and video recognition, medical image analysis, and various other tasks requiring visual data interpretation.

- **Pre-process**

Pre-processing in machine learning involves transforming raw data into a clean and usable format before feeding it into a model. This step is crucial for enhancing the model's performance and typically includes tasks such as handling missing values, normalizing or standardizing numerical features, encoding categorical variables, and removing or correcting data inconsistencies. For image data, pre-processing might involve resizing images, converting color spaces, and augmenting data through techniques like rotation and flipping. Effective pre-processing ensures the data is in the best possible shape for the model to learn from, ultimately leading to more accurate and reliable predictions.

- **Yolo model files**

YOLO model files typically include the configuration file, weight file, and class names file. The configuration file (e.g., yolov3.cfg) defines the architecture of the YOLO network, specifying the layers, filters, and connections. The weight file (e.g., yolov3.weights) contains the pre-trained weights for the model, capturing the learned features and parameters from training on a large dataset. The class names file (e.g., coco.names) lists the names of the object classes that the model can detect, usually corresponding to a dataset like COCO. Together, these files enable the YOLO model to be loaded, configured and utilized for detection tasks.

#### **Algorithm**

- The YOLO (You Only Look Once) algorithm is an advanced deep learning model for real-time object detection.

It divides the input image into a grid and directly predicts bounding boxes and class probabilities for each grid cell. This unified approach treats object detection as a single regression problem, making it extremely fast compared to traditional methods that involve multiple stages and region proposals. YOLO's design allows it to process images in a single forward pass through the network, achieving high frame rates suitable for real-time applications.

- YOLO has undergone several iterations, with each version enhancing accuracy and efficiency. The algorithm is widely used in various domains such as surveillance, autonomous driving, and robotics due to its ability to generalize well across different contexts and its impressive speed. Key

improvements over time include the introduction of anchor boxes, better backbone networks, and multi-scale predictions. YOLO's balance of speed and accuracy makes it a popular choice for practical object detection tasks.

- In fact, it has shown an execution time that is more than 5 times shorter than that experienced when the Decision Tree algorithm has been considered.
- Analyzing these results, it is possible to note that the ML algorithms that have shown the better performance are Random
- Performance comparison among the above-mentioned ML algorithms

#### **Advantages**

- Accuracy is more by using algorithm
- More training process

#### **CONCLUSION**

AI in terrorism activities has not been extensively observed, it's essential for governments, tech companies, and civil society to remain vigilant and actively monitor developments in this area. Continued research, international cooperation, and responsible AI governance are crucial to mitigate the risks associated with the potential misuse of AI by terrorist organizations.

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