CRIME DETECTOR USING DEEP LEARNING

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Abstract

A number of technologies have been developed to identify events in security cameras since 2008. Furthermore published in this topic are more than a hundred journal articles and conference papers. But no poll has specifically addressed identifying incidents in the monitoring system.This inspired us to offer a thorough analysis of the various event detection systems that have been created.From this study, it can be inferred that three elements are necessary for the development of an autonomous surveillance event detection system: precise and quick object identification in the first stage to locate the activities, classification model to make inferences from the input data. i.e., reviewing the CCTV camera feeds to see whether there is any suspicious behaviour shown in the video.

`Keywords; security cameras, event detection, object identification, classification model, autonomous surveillance, CCTV, suspicious behavior, video analysis.

I .Introduction

It sounds like you are working on a project to help banks reduce risk when granting loans. By mining previous loan records, you aim to train a machine learning model to accurately predict whether granting a loan to a particular person is safe or not.The project is divided into three main sections: data collection, comparison of machine learning models, and training and testing. In the data collection stage, you will gather previous loan records. In the second stage, you will compare different machine learning models to determine which one works best for this task. Finally, in the training and testing stage, you will use the chosen model to predict the safety of loan assignments.Some of the machine learning algorithms that you plan to use include classification, logistic regression, and decision trees. These algorithms are commonly used in predictive modeling tasks and can help you accurately predict loan safety.Overall, this project has the potential to save banks time and resources by automating the loan approval process and reducing risk.

The trials were carried out in accordance with the transmission requirements and the technical standards for CCTV security systems (62676-4). (62676-1-2). The testing goal was a person walking normally. The method the trials were conducted enables comparison of the various outcomes. The area under monitoring was always illuminated and devoid of any other distracting features. The test subject repeatedly performed the identical actions at the same distance from the camera and filled the whole height of the image. This ruled out the idea that the resolution assigned to the moving item would change due to changes in the camera's resolution. 100 times were required to complete each exam.

II. SURVEY OF LITERATURE

A The issue of indirect land use change (iLUC) and its impact on greenhouse gas emissions due to the expansion of agricultural land for biofuel production has been a topic of debate. In this study, we have conducted a thorough analysis of iLUC, deforestation, irrigation water use, and crop price increases resulting from expanding biofuel acreage. Using the GLOBIOM economic partial equilibrium model,

we have evaluated the global forest, agriculture, and biomass sectors with a bottom-up representation of agricultural and forestry management practices. Our findings indicate that the use of sustainably managed existing forests for second-generation biofuel production leads to a negative iLUC factor, resulting in 27% lower emissions compared to the "No biofuel" scenario by 2030. However, the iLUC factor of the global expansion of first-generation biofuels is generally positive, taking approximately 25 years to be paid back by the GHG savings from the substitution of biofuels for conventional fuels. The second edition of Intelligent Network Video, published in 2008, reflects the significant advancements in the video surveillance market, particularly the widespread adoption of IP-based solutions and the rapid development of technology. This updated edition includes two new chapters on thermal imaging and hosted video technologies, and offers over 50 percent more content with nearly 400 full-color images. It serves as a valuable reference for industry professionals seeking to understand the latest advancements in video surveillance systems, including improved image quality, enhanced performance, and higher levels of intelligence. The book covers updated specifications on digital video formats such as MPEG-4, resolution advantages of analog vs. digital systems, intelligent video capabilities, frame rate control, and factors to consider for indoor/outdoor installations. It also provides updated information on industry hardware, software, and networking capabilities of the latest cameras and DVRs. Overall, this second edition reflects the dynamic changes and advancements in the field of network video surveillance since the publication of the first edition in 2008.

III. PRUPOSED WORK

As part of the research in this area, a section of the article is dedicated to investigating whether changes in the settings of a CCTV system, such as framerate or resolution, can impact its motion detection capabilities. Due to the use of different devices and algorithms, it is possible that motion detection may be influenced by varying video quality. This video quality may or may not align with the maximum quality that the camera is capable of providing. To determine the data that camera systems actually work with, two approaches were utilized. One of them involved conducting a survey among CCTV system manufacturers.

One section of this page is devoted to determining if changing the CCTV system's parameters, including framerate or resolution, affects the motion as part of the study conducted in this field .capacities for detection. There is a chance that footage of differing quality will be used for motion detection because there are so many different sensors and algorithms being employed. This video quality might, but need not, be different from what the camera is capable of producing. We choose to employ two methods in order to determine what data the camera systems use. One of them was a study of manufacturers of CCTV systems.

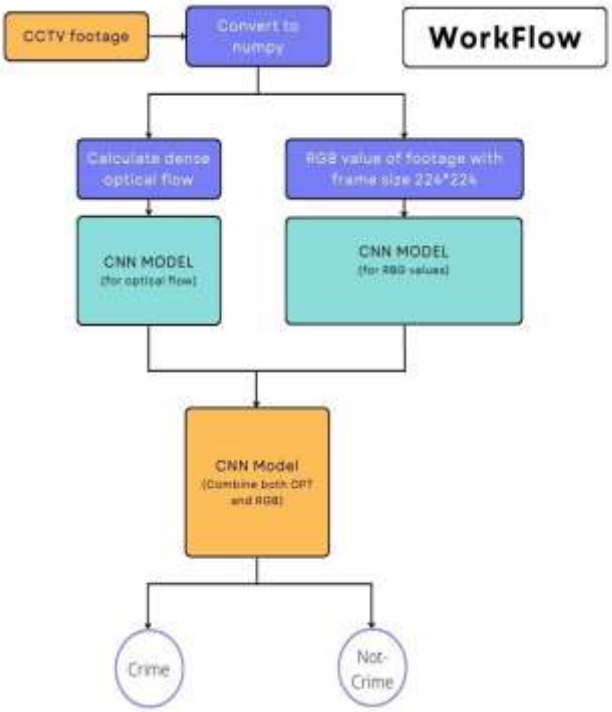


Figure : Flow Diagram

The output is calculated using the probability for each of the seven classes using the Softmax activation function in the Fully Connected layer. The projected class is the one with thehighest likelihood. The feeling of the photographed object ismore likely to be the category with the highest likelihood.

A. Result Analysis

FER is only one of the many computer vision applications that frequently employ CNNs. The following traits were usedto train the proposed CNN model: Using "ReLU" as the activation function, there are six convolutional layers. With each filter having a size of 64 for the first two levels, 128 forthe second, and 256 for the final two layers (5,5).
Three layers with maximum pooling, each layer utilising poolsize (2,2). Every two convolutional layers come before a max-pooling.
A dropout having a value of one.
Two dense layers with one dense layer using "ReLU" as an activation function and the second dense layer having "Softmax"
There are 27,87,015 total parameters and 27,85,763 trainableparameters.
This is a flowchart showing how the suggested CNN model would work..

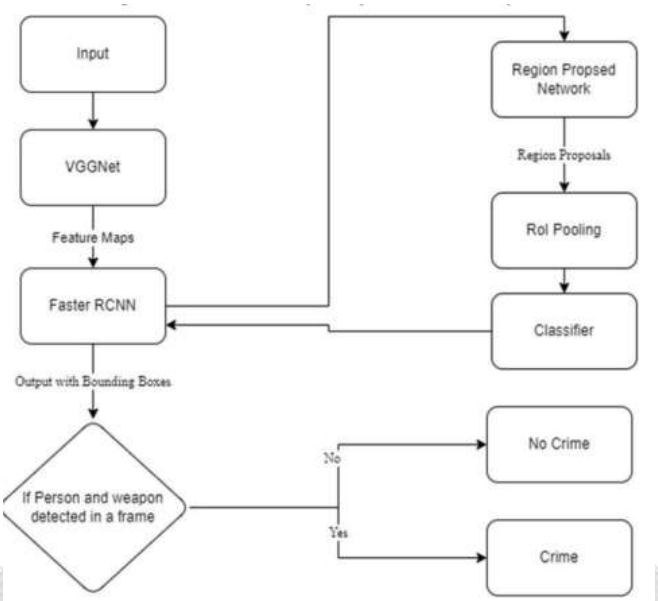
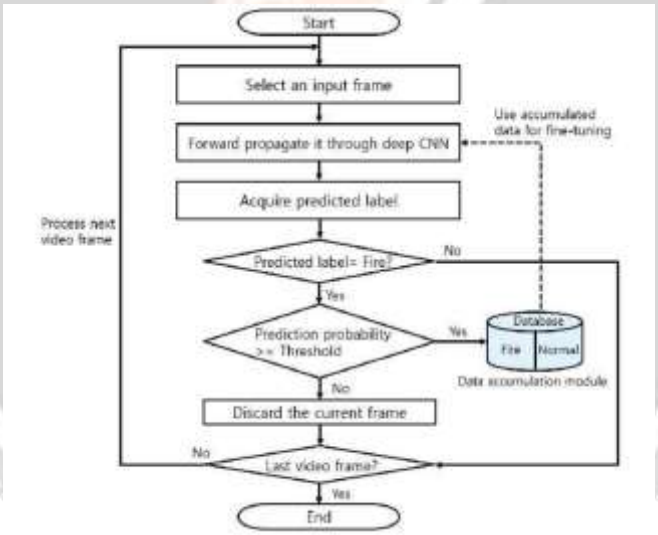


Fig. 4. System architecture for Automated Crime Intention detection

IV Algorithm :



The K-Nearest Neighbours (KNN) technique is a kind of supervised machine learning algorithm that may be used to challenges involving classification and regression predictive modelling. However, it is mostly employed in industry for categorization and forecasting issues. The next two characteristics would

- KNN is a lazy learning algorithm since it uses all of the data for training while classifying and does not have a dedicated training phase.
- Due to the fact that it makes no assumptions on the underlying data, KNN is also a non-parametric learning method.

V Output :

Fig 1:input

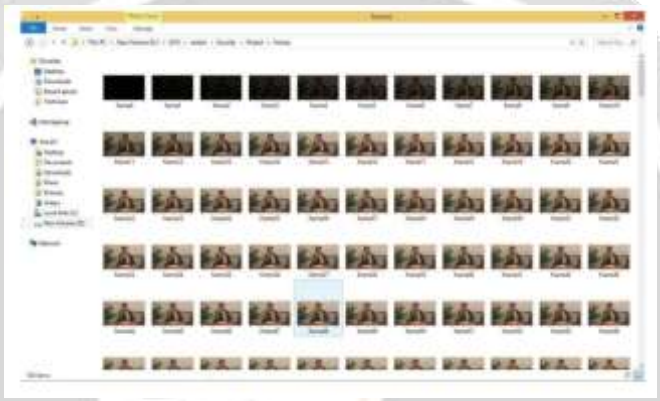


Fig 2: frames

Fig 3:output

Fig 3.1:output

VI CONCLUSION :

According to the findings of these studies, it is not feasible to completely rule out the potential that modifications to parameters like framerate or resolution may affect a surveillance system's ability to detect objects. We can see that various systems operate in different ways. The majority of the systems under comparison demonstrated signs that they employ data for motion detection that is independent of the system's present settings.These technologies very certainly employ a separate video stream for analysis (such as video-based motion detection). Non-uniform motion detection sensitivity settings are to blame for variations in motion detection success rates between different devices. The tested data, however, are unaffected by these adjustments because they would result in both greater and lower success rates

VII FUTURE WORKS :

As an AI language model, I can provide some suggestions for future works in developing automatic surveillance event detection systems based on the existing research in this field:

- Integration of multiple sensors: In addition to CCTV cameras, other sensors such as audio sensors, thermal sensors, and motion sensors can be integrated to improve the accuracy and reliability of event detection systems.

- Integration of deep learning models: Deep learning techniques such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs) have shown promising results in object detection and event recognition. Integration of these models can lead to improved accuracy and robustness.

- Real-time event detection: Real-time event detection is essential in surveillance systems for timely response and intervention. Therefore, future works can focus on developing event detection systems with minimal latency and high accuracy.

- Multi-camera event detection: In many surveillance scenarios, events occur across multiple cameras. Therefore, future works can focus on developing multi-camera event detection systems that can integrate data from multiple cameras and provide a comprehensive analysis of the events.

- Evaluation of event detection systems: As event detection systems are developed and tested, it is important to evaluate their performance and compare them with existing systems. Future works can focus on developing standardized evaluation metrics and benchmarks for event detection systems.

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