



Smart Human Activity Detection

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ABSTRACT

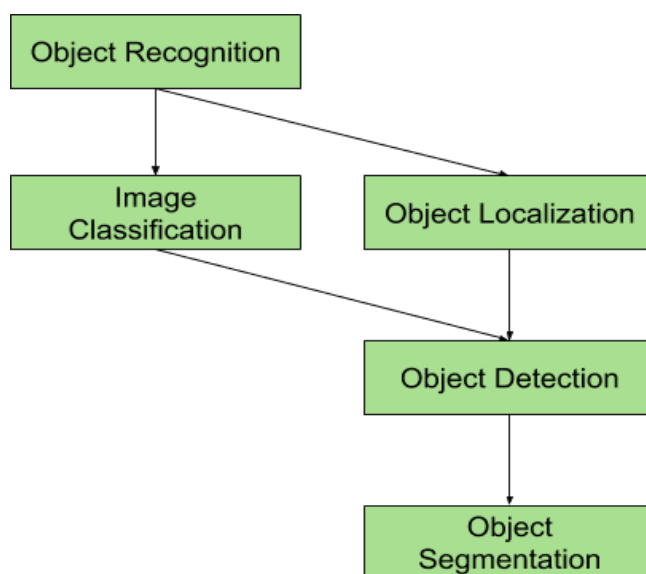
Recognition of human activity has a wide range of applications in medical research and security systems. In this project, we create a YOLO-based Human Activity Recognition System. Object Detection, Fall Detection, Social Distancing Detection, and Vehicle Crash Detection are four human actions that we created a four Yolo-based recognition system to recognize. Four passive learning approaches were used to train and assess the activity data: Cmake, CUDA, Cuda CNN, and Dark Net neural networks. In the Liris Human Activities dataset, we show that YOLO is an effective and fairly fast method for recognition and localisation.

Keywords: Object Detection, Deep Learning, Neural Networks, YOLO Algorithm.

Introduction

Understanding human activities has become one of the most popular study issues in computer vision. Recognition of human activity is important in human-to-human interaction and interpersonal relationships. It is tough to extract since it contains information about a person's identity, personality, and psychological condition. One of the key objects of study in the scientific fields of computer vision and machine learning is the human ability to recognize another person's activity.

YOLO is a novel way to object detection. Classifiers have been repurposed to do detection in previous work on object detection. Rather, we consider object detection to be a regression issue with spatially separated bounding boxes and associated class probabilities.



PRELIMINARIES OF SMART HUMAN ACTIVITY DETECTION

First, we'll go over the design considerations for building an electronic voting system in this part. Then, we'll go through blockchain and smart contract technology, as well as their suitability as a service for constructing an electronic voting system.

A. Design considerations

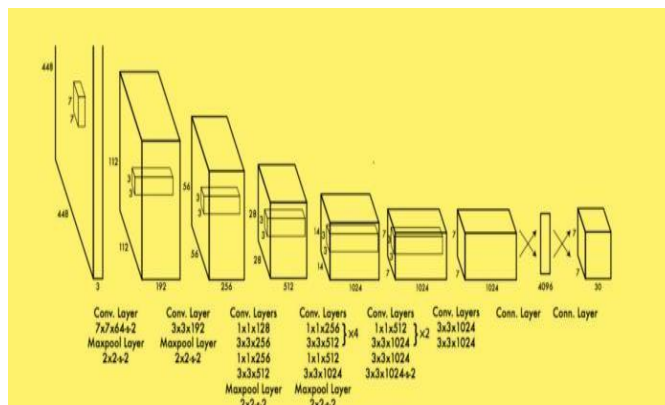
After assessing existing e-voting technologies as well as the prerequisites for such systems to be used effectively in a democracy,

We compiled the following list of needs for a sustainable e-voting system for the upcoming national election:

- (I) No coerced voting should be allowed in an election system.
- (ii) A secure authentication method via an identity verification service shall be available in an electoral system.
- (iii) A voting mechanism should not allow voters' votes to be traced back to them.
- (iv) An election system should provide transparency to voters in the form of verifiable assurances that their votes were counted correctly and without jeopardizing their privacy.
- (v) An electoral system should make it impossible for a third party to meddle with any vote.

B. Architecture

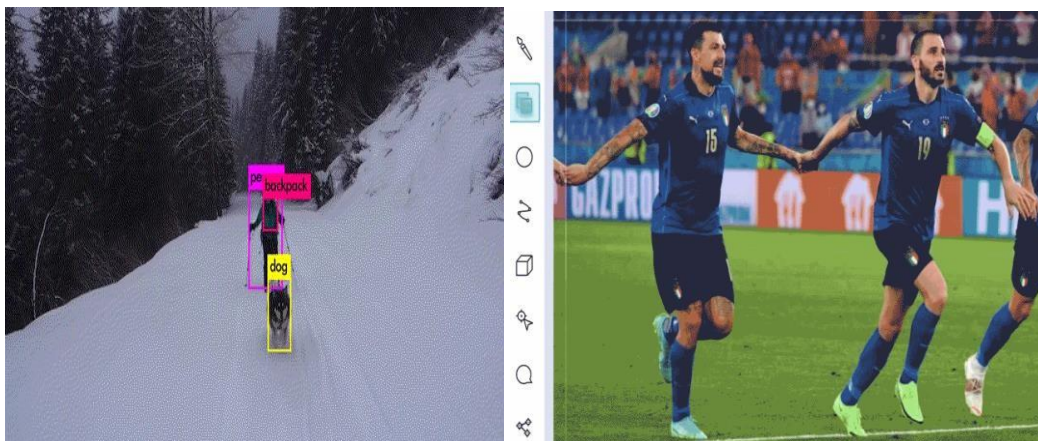
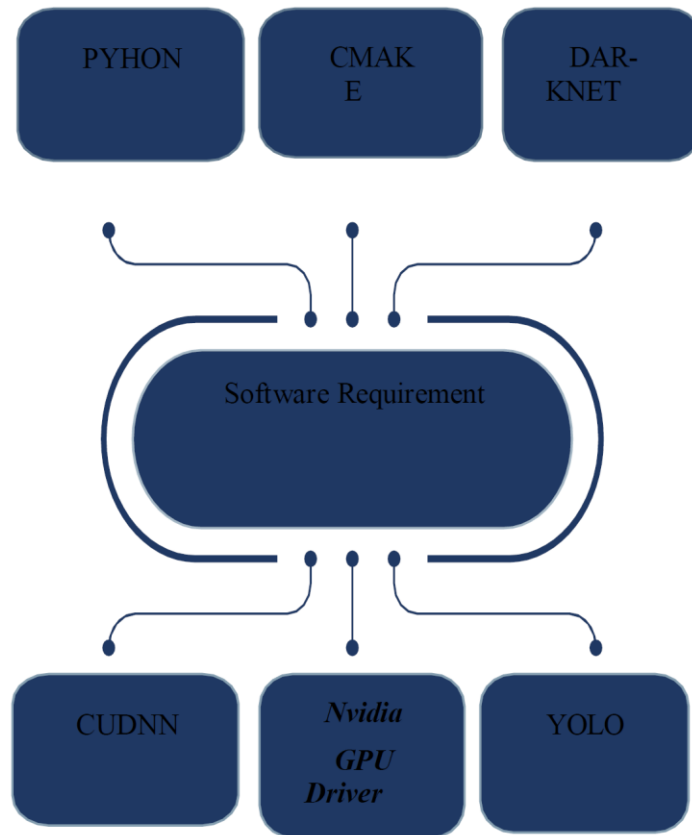
The architecture of YOLO was influenced by Google Net. The architecture of YOLO is depicted in the diagram below. Convolution layers extract information from an image, and the final FC layer forecasts bounding box parameters, object nesses confidence, and conditional class probability.conditional class probability.



III. FUTURESCOPE

We proposed a YOLO-based real-time model for human action recognition in video. Our study's main finding is that even a small number of frames can be used to identify actions in a video. We discovered that in some cases, a single frame is sufficient for action recognition. We'll also work on improving action recognition with the help of object detection in frames, allowing us to detect more complex human actions. The movement of objects, as well as the Euclidean distance between the centers of moving objects and humans, might provide additional information on the action taking place in the video.

A. Software Requirement



V.CONCLUSION

The recognition of human activity has a wide range of applications in medical research and human survey systems. We created a Yolo-based identification system that detects four human activities: object detection, fall detection, social distancing detection, and vehicle crash detection in this research.

Four passive learning approaches were used to train and assess the activity data: Cmake, CUDA, CudaCNN, and DarkNet neural networks.

We present YOLO, a unified object detection model. Our model is simple to build and can be trained on complete photos immediately. YOLO is trained on a loss function that directly corresponds to detection performance, unlike classifier-based techniques, and the entire model is learned together.

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◆ Dataset used [<https://archive.ics.uci.edu/ml/machine-learningdatabases/00240/UCI%20HAR%20Dataset.zip>]