

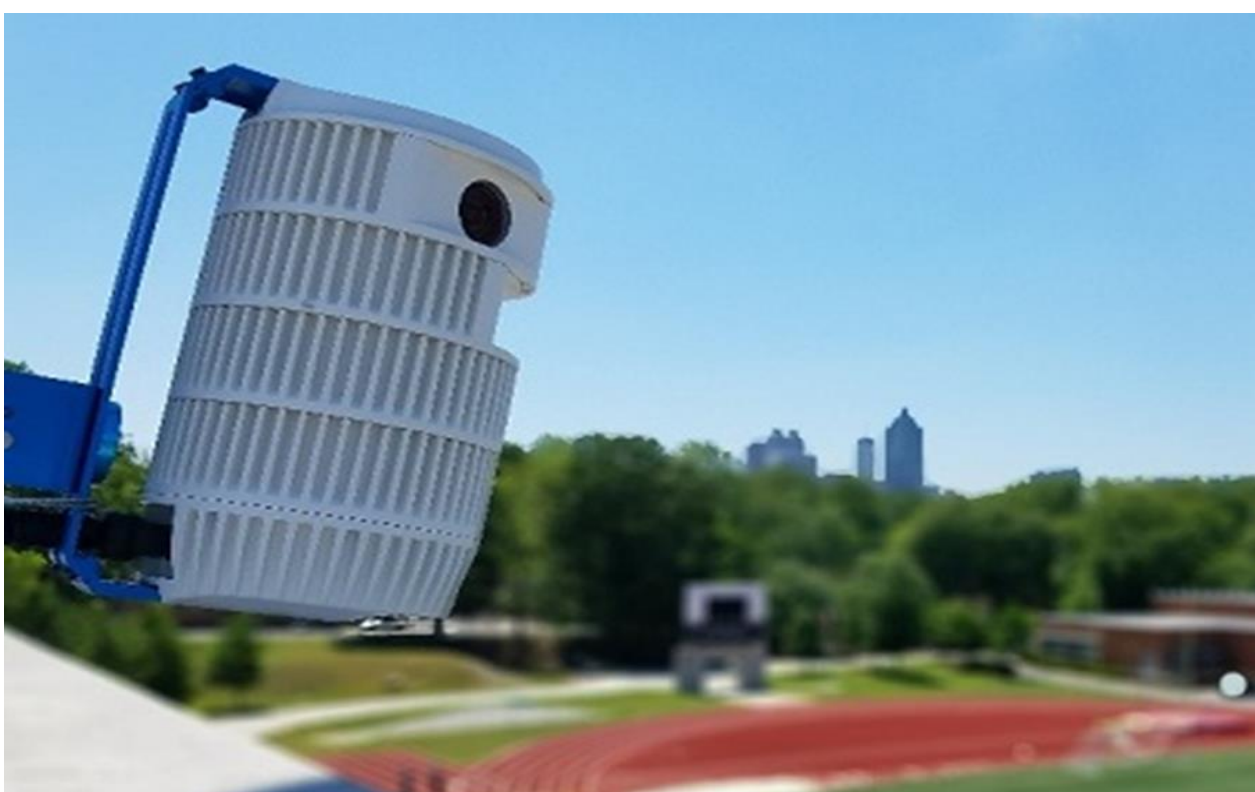
# RECOGNIZING SPECIFIC ACTIVITIES FROM A VIDEO

## Abstract

**Human activity recognition(HAR)** has seen various developments in the recent few years in the area of deep learning. This project talks about how we can implement **HAR** to **recognize different activities in the area of sports**.

## Introduction

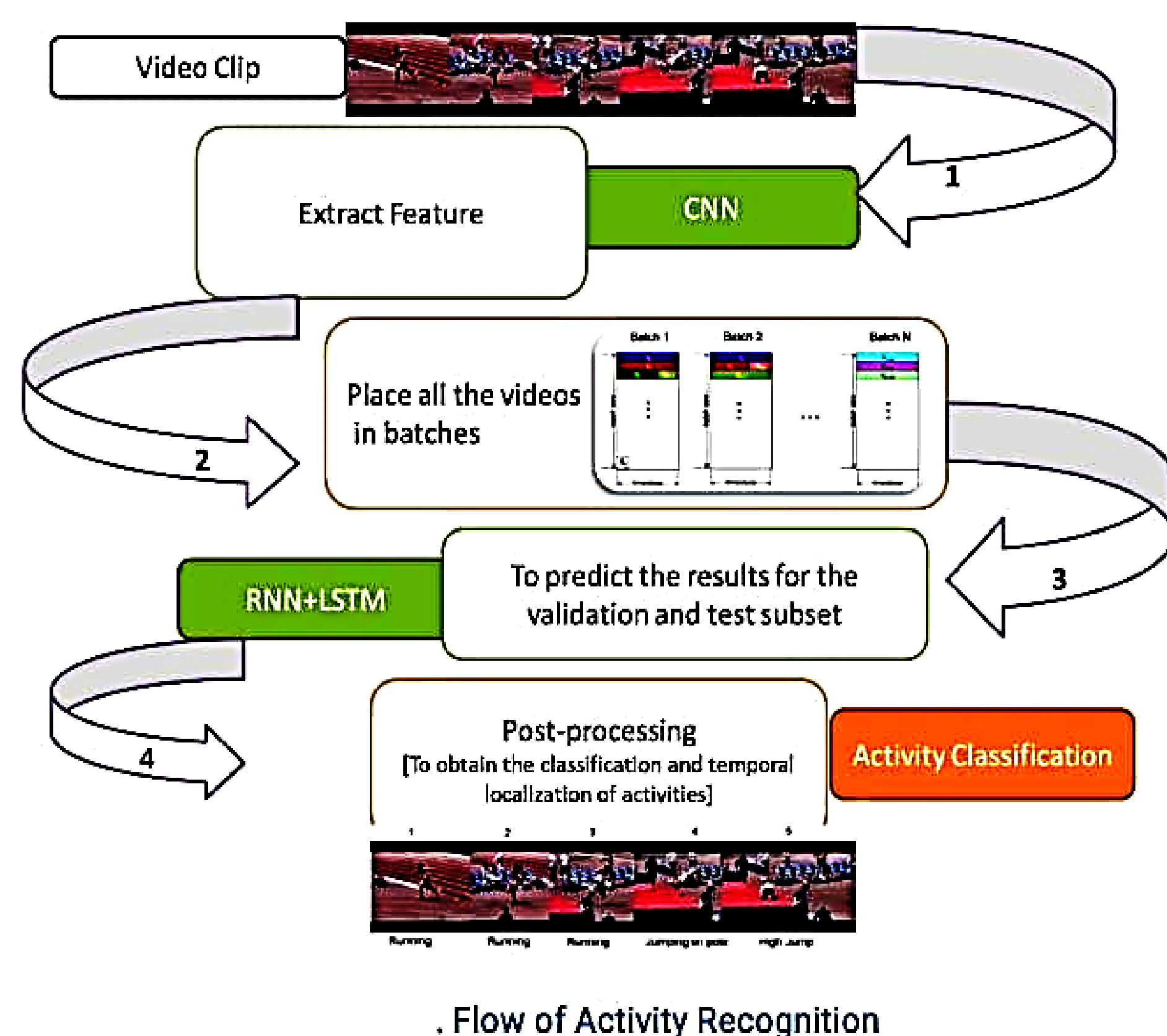
**Deep Learning** has shown its importance in almost all fields including sports. The responsibility of various broadcasting techniques like zooming in, panning out and various surveys to improve marketing are all being carried out by various DL algorithms.



Eg.Pixellot technologies introduced overall game monitoring system.

We focus on introducing a model which will help recognize and categorize the various subactivities involved in a sport helping us finally identify the sport.

## Proposed Method



. Flow of Activity Recognition

**To use frame extraction method and perform CNN architecture on the images for feature extraction and use the spatial as well as temporal features for performing LSTM architecture to obtain the final result.**

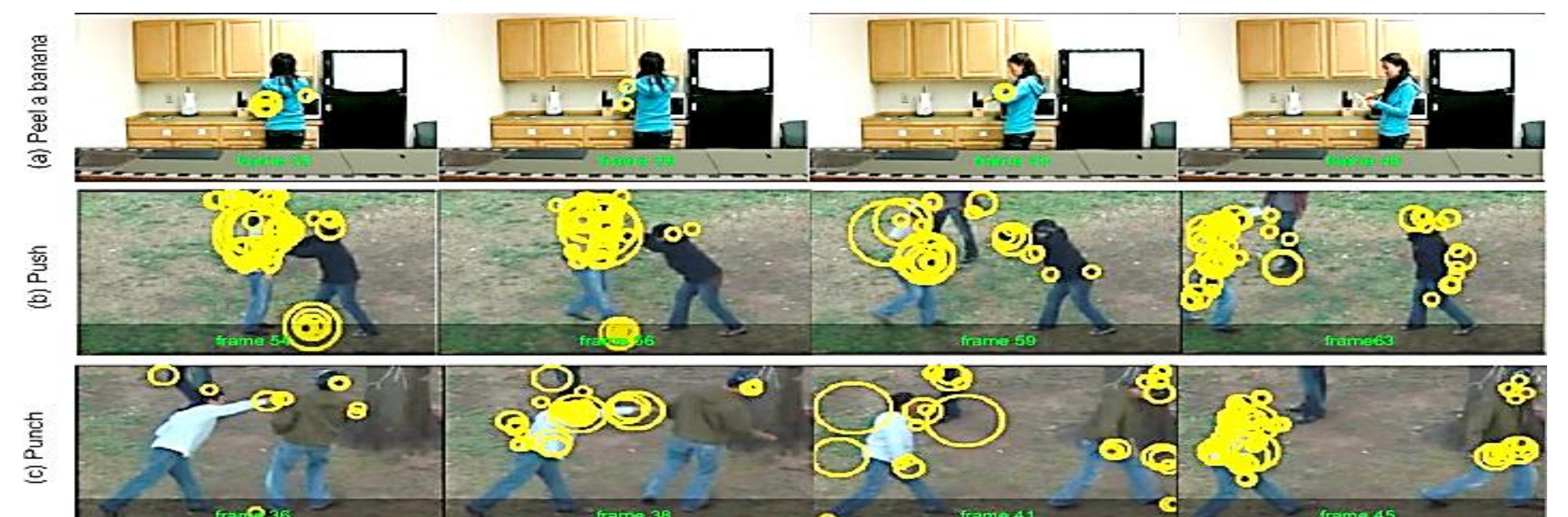
## Experimental Results and Discussion

- ❖ The initial calculations over the idea resulted in the requirement of using **CNN architecture**.
- ❖ Sports video dataset **UCF101** was used to obtain the frames and the CNN model built provided excellent results.



- ❖ Supervised learning with CNN helped in extracting the **spatial features**.
- ❖ The **temporal features** were obtained by two methods.

- ❖ One was to build a CNN model and feed manually classified data into it, to obtain the classifications.
- ❖ The next method used **k-means clustering** algorithm to classify sub activities as clusters.



- ❖ A final **LSTM** model with input given as the spatio-temporal features produced the final output as sub activities recognized from the video.

## Conclusions

In this era of new technologies and everything being automated, it is quite difficult to manually monitor various sports in many international games. Our model has been contributed as a basic step to further development of technologies to improve the current scenario.

## References

Tensorflow.org,superdatascience.com,colab.research.google.com,