

Cricket Activity Detection

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March 4, 2014

Introduction

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- The agent learns the various shots by some video clips of particular shots and then tries to identify a shot played in a similar clip.

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Examples

Pull shot, Cover drive, Straight drive.

Introduction

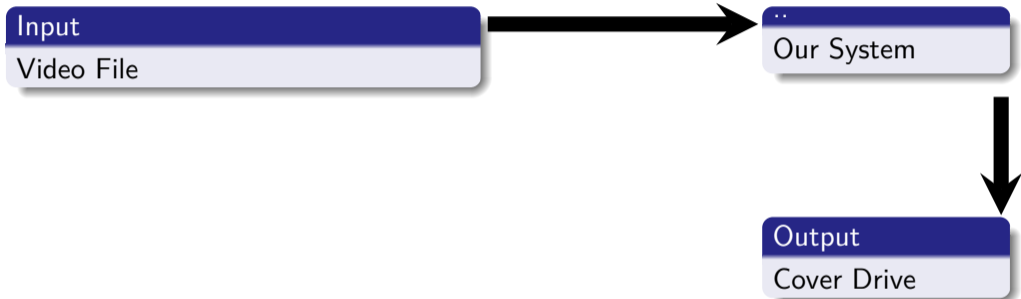
Input

Video File

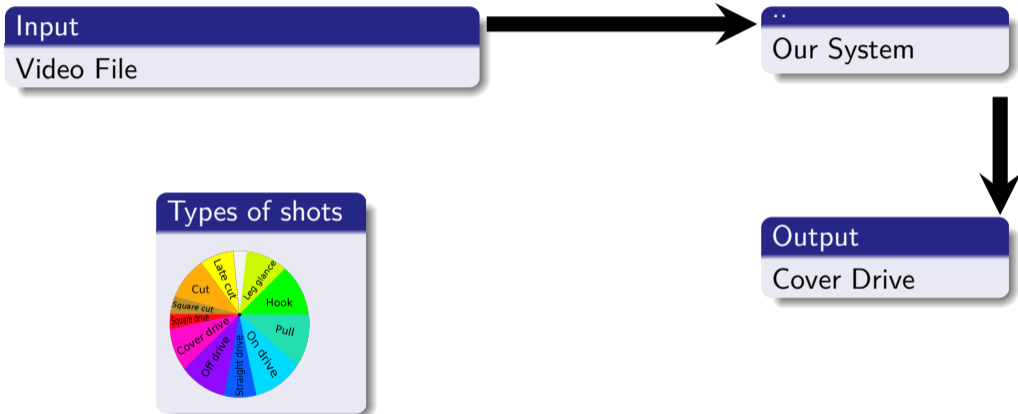
Introduction



Introduction



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Human Pose Estimation

- Human pose estimation task is widely studied in computer vision. There are many ways to solve this problem.
- Most of the pose estimation work uses a tree structure of the human body.

Human pose estimation(Examples)

Input



Output

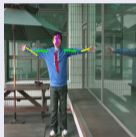


Human pose estimation(Examples)

Input



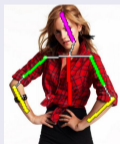
Output



Input



Output



Human pose estimation(Examples)

Input



Output



Input



Output



Code

http://groups.inf.ed.ac.uk/calvin/articulated_human_pose_estimation_code/

Our Approach

- We intend to use the work from [1] to our use in video analysis, to identify and classify the cricket shot.
- We will analyse the different frames in a clip and find the correct human pose in a frame (batsman) and then by similarity analysis and movement of the object (bat) in the different frames classify the shot played in that clip.
- The correct human pose in the frame will (hopefully) help us in tracking the motion of the bat in the clip with better accuracy and thus greater precision in identifying the cricket shot.

Tree Structure(Step 1)

- Divide video clip into frames and analyse each frame of video.
- Convert human pose into tree structure, and label all body parts(hands, legs), and bat with different labels.

Tracking tree structure(Step 2)

- Create a model(Feature Vector) by tracking the tree structure.

Multiclass classification(Step 3)

- Classification problem can be solved using different type of Machine learning algorithms.
 - Adaptive Boosting(AdaBoost)
 - support vector machines(SVM)
 - k-Nearest Neighbors algorithm(k-NN)

Our Approach

Step 1(Input: video clip)

Divide video into a set of images.
Create tree structure of human pose corresponding to each image.

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Step 3

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Step 2

Create on model based on tree structure obtained in step 1.

Step 4

Output: Type of shot played by batsman.

Step 3

Use Machine learning algorithms for classification(AdaBoost, SVM, k-NN).

Cricket Dataset

We do not have a standard dataset available for the various shot types in a video clip format. We plan to create a dataset of a cricket match live recorded (without ads) so that we can get the small clips for various shots as well as full match for training purposes with various camera angles.

Future Work

- This work if proves to be accurate enough, can be taken further for automatic commentry for a whole match duration.

References

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- [http : //groups.inf.ed.ac.uk/calvin/articulated_human_pose_estimation_code/](http://groups.inf.ed.ac.uk/calvin/articulated_human_pose_estimation_code/)
- M.Andriluka,S.Roth,andB.Schiele.Pictorial structures revisited: People detection and articulated pose estimation. In CVPR, 2009