

# High Speed Ball Detection and Tracking in Sports - Team 18

**Problem Statement:** Analyze live video stream, to detect and track the ball and then classify to improve the decision-making ability along with analyzing the players performance.

**Introduction:** Ball trajectories are one of the most fundamental and useful information in the evaluation of player’s performance and strategic decisions in different sports. Most widely used Hawkeye system in sports with many high-performance cameras - makes it too expensive and unaffordable for the players at amateur levels. Using neural network model it can be possible at a low cost and efficient way to detect and track the ball. It helps to classify certain sports decisions and analyse the player performance like below:

- Classifying if the ball was a waist-high no-ball or foot overstep no ball by bowler (Cricket).
- Tracking the ball trajectory to determine if the ball was pitched outside the sidelines (Tennis, Soccer, Badminton).

**References:**

- Paper depicting the Tracknet model which utilizes CNN followed by a DeconvNet neural network - [🔗](#) [🔗](#)
- Reference model implementation - [🔗](#)
- Tool for labeling of datasets used by TrackNet. - [🔗](#)
- Ball tracking algorithm reference in cricket - [🔗](#)

**Expected Outcomes:**

- Video demo showing the detection, tracking and classification to make the respective sport’s decision.
- Working model with better accuracy in real time scenario to make correct classification.

**PC#1 Tasks:**

1. Paper review and analyse different available models for ball tracking in different sports.
2. Understand Tracknet’s CNN and DeconvNet neural network model.
3. Identify and arrange the dependencies, resources and packages to train and test the model.
4. Train and test the existing Models on available datasets of Tennis and Badminton.
5. Prepare documentation and presentation for current phase.
6. Collect datasets for training and testing of the application.
7. Labeling and creating the dataset for the implementation.
8. Train model on new data set for Cricket and test it with the test data.



PC #1 Task	Viraj M1	Raunak M2	Nayan M3
Task 1			
Task 2			
Task 3			
Task 4			
Task 5			
Task 6			
Task 7			
Task 8			