PROJECT STATUS REPORT

Project Name	Dynamically creating and shifting the guideline for wide deliveries	Reporting Period
Sport	Cricket	
Team members	• Varun C • Varun Kamath • Vikas Paul Menezes • Vishal M Godi	06/05/2023-08/09/2023

HIGHLIGHTS

- Successfully created a video dataset using PES cricket ground with two camera angles which was the starting point for our project. (Credits: Hithesh as cameraman and Anirudh as batsman)
- Synced the videos from the two camera angles.
- A 3D model of the pitch was created using a visualization library in python called VPython.
- The batsman's movement on the pitch in the video is mapped onto the 3D model of the pitch.

CHALLENGES

- Video Dataset had to be created by us as we could not find a dataset online which was of our interest.
- Mapping of 2D co-ordinates in video frames to the 3D model is a tricky task as we have to do complex trigonometric calculations.

STATUS UPDATES

Task or Deliverable	Task Owner	Status	Notes
			• 3D model of the pitch was

• Creating the video dataset • Syncing the videos from the two camera angles. • Creating a 3D model of the pitch • Mapping batsman's movement onto the 3D model • Ball Detection in video frames	• All 4 members of the team • Varun Kamath • Varun C, Vishal M Godi • Varun Kamath, Vikas Paul Menezes • Varun C, Vishal M Godi	DONE	created using VPython visualization library. • Ball detection in video frames was done using YOLO model. • The batsman's backfoot movement and positioning is mapped and visible on the 3D model.
• Ball trajectory prediction for ball tracking • Virtually drawing the new guideline on the 3D model of the pitch based on the batsman's position at the time of ball release.	• All 4 members of the team.	ONGOING	• Going through more research papers for trajectory prediction. • The virtual guideline should be completed within the next week.
• Another round of data collection needs to be done as we realized we would require one more camera angle and to standardize the mapping of 2D coordinates to 3D coordinates.	• All 4 members of the team.	STUCK	• Should be completed by the next week.
• Testing different models for faster ball detection.	• Varun C, Vishal M Godi	ARCHIVED	• Will be worked on parallelly, but not a priority.

NEXT STEPS

Action Items

Task or Deliverable	Task Owner
• Ball trajectory prediction for ball tracking with depth prediction.	• Varun C, Vishal M Godi
• Virtually drawing the new guideline on the 3D model of the pitch based on the batsman's position at the time of ball release.	• Varun Kamath, Vishal M Godi
• Automating wide ball decisions based on the above two steps.	• All 4 members of the team

Pending Issues

- Yolo model takes some time to run, and we are looking at alternatives for ball detection.
- If other models don't improve either, we will have to stick with Yolo or drop ball tracking altogether and just extract the final position of the ball on the pitch which is sufficient to judge a wide ball.

Mentor in charge

Faculty in Charge: Dr. Charu and **Dr. Sandhesh**

Comments given by the faculty: We received valuable advice and support from our faculties with respect to access to research papers and their tips on using computer vision and visualization libraries were very helpful to us.

GitHub link to our project

[VishalMGodi/STARC-Wide-ball-detection at Testing (github.com)](https://github.com)

Important files include

- draw_pitch.py: 3D model of the pitch.
- yolotest.py: Ball detection.
- testPose.py: Mapping of batsman's movements onto the 3D model of the pitch. (Will add ball detection from yolotest.py later on)