Project Proposal

Project Name: basketball predictor

Group Members:

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We are planning to make a basketball predictor that can predict where the basketball will land. We want to solve this because as sports fans, we find that it's interesting to know if the basketball could be shot right into the basket before it lands. However, as human beings, our prediction is not that accurate. Therefore, we want to use the machine that has much better computing abilities to solve the problem. Our ultimate goal is to make the machine recognize basketball in a video and predict where the basketball will land when it just leaves the player's hands.

First, we will have two cameras recording videos of people shooting the ball to the goal. One camera will be on the side and another camera will be placed behind the basket and record videos perpendicular to the first one.

Second, we will take every single frame of the video and use the techniques we've learnt in the class to make the computer recognize where the basketball is. Since the basketball is orange and

may vary largely from the background color, it will be easy for the computer to track the basketball.

Third, we will track the basketball in every frame and make the computer to record its positions in an already-formed coordinate system.

Fourth, we will make the computer to compute the trajectory of the basketball and use a math formula to figure out where the ball will ultimately land.

Fifth, we will make the computer collect data of the basketball and predict the final landing point simultaneously. Therefore, the longer time after the ball leaves player's hand, the more data our machine could collect, so as the accuracy it predicts. We will show the predicted trajectory with a red line and predict whether it will hit the goal or not.

Timetable:

1. Take videos, divide into individual frames, and find the ball	Sept - Early Oct
2. Track and record the positions of the ball	Mid Oct - Early Nov
3. Build a mathematical model to predict the initial velocity (including direction) and the acceleration of the ball.	Early Nov - Late Nov
4. Compute and print the projectile. Also build the website and prepare for the presentation.	Late Nov - Early Dec