

Journal 0

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1 3 Sentences

Watching the game of lacrosse is challenging for those who do not play the game due to the sport involving ten players on each team constantly sprinting and the necessity for spectators to see the game ball that is the size of an orange as it is passed or shot at speeds of over 90 miles per hour or hidden within a player's stick. Background image subtraction can simplify a video by eliminating the parts of two adjacent frames of a video that are static, and there are certain algorithms that can identify circles, such as the Hough Circle Transform. My project is to combine frame simplifying processes like background image subtraction with other techniques to find certain shapes, such as the Hough Circle Transform, to identify and track a ball in game footage to make the game of lacrosse more accessible and understandable to viewers and analyzers.

2 What obstacles to success do you see?

I will need to find a way to know when the lacrosse ball is being carried in someone's stick versus when the ball is in the air being passed. When the ball is being carried, the ball is occluded and I will most likely need to use heuristics to identify the player that is most probable to have the field.

Identifying entities on the field that are players will be challenging because there are times in the video when there are more or less than the usual ten players on the field, as some players will be off frame or there will be referees or coaches in the frame. There is no simple geometric shape I can use to match and identify players because players are constantly contorting their bodies when playing the sport. Also, there is no predictable path players will take when playing the sport. Finally, at times, players may appear to occlude one another, making tracking players that may have the ball difficult.

Being able to track the ball when it is passed will be more challenging than implementing an algorithm to detect the shape of a circle because the ball is so small. Instead, one way I could locate the ball is to find a way to identify fast but tiny excerpts of a video frame and combine that with identifying shapes within that are circular.

3 What materials do you need?

To complete this project, I do not need anything physical like equipment. The extent of what I will need are videos of lacrosse games, which I have already saved on my computer.

4 What is your first mark of progress?

The first step of my project is to test whether I can or cannot track a ball in a simplified scenario; when I know the ball is being passed, I should be able to use a circle detection algorithm, image subtraction techniques, and a tracker to locate and track the ball.