

Goalie Bot

Project Intro:

We intend to predict the trajectory of a ball hit at the goal with the help of image processing.

Details:

The eyes are three cameras. They are positioned around the goal in order to capture the x, y and z components, pinpoint the ball and then follow its trajectory. The ball has to have a color that distinguishes it from the background.

An image processing software uses these images to calculate the ball's probable point of impact on the goal. This information can be transmitted in real time to a motor control, which can help a mechanical goalie to move towards the spot and save the goal. We can take care of the Magnus effect by using MATLAB for processing and make a function using MATLAB.

All of this happens within fractions of a second; after all a well-kicked ball can attain a speed of well over 100 km/h. The penalty mark for the Robotic Goalkeeper is about 9 meters from the goal, leaving only 0.3 seconds to predict the right trajectory and spot at which it'll enter the goal.

We'll try to make the mechanical Goalkeeper as well, if possible.

Timeline:

Week 1and2:

Research and study about the Image Processing and the project. Learn Image Processing and start researching trajectory recognition.

Week 3and4:

Learn Trajectory Processing and transfer output to computer and purchasing components.

Week 5:

Finish the project and testing.

Week 6and7:

Debugging.

Learning:

We aim to learn real time image processing through the project and predicting the trajectory via the information gained from the cameras through python.

Cost:

We can't predict the exact cost of the project, but our rough estimate says we should do it in 5k rupees(cameras, goal post etc.) to 10k rupees max (If the mechanical goalkeeper is made.)

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