

Open Challenge Description: Automatic Referee Assistant

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1. Introduction:

Judging as a referee is a complicated task in SPL with significant effects in a match. This is due to the several events taking place simultaneously during a game, each in a different part of the field. Most of the teams had experienced many incidents missed or announced with a delay by the referee, with some possible effects on the game scenario (e.g. recognizing events such as out, goal, falling or inactive player, etc.). This is due to the limited attention of the head referee together with variety of events happening in the game. The issue is significant enough that the league's technical committee suggested automatic referee assistance (Partially for the illegal defender penalty) as a subject for the technical challenges.

2. What the Program Provides

Team MRL-SPL is presenting an automatic head referee assistant capable of displaying most of the game events. This information can be displayed on a LCD screen nearby the field or through a headset carried by the main referee. The software, processes data coming from six depth cameras which are placed around the field. The proposed software is able to denote following incidents:

1. Illegal Defender/Positions
2. Ball is Free
3. Kickoff Goal
4. Inactive Player (Falling Robot)
5. Leaving the Field
6. Local (Global Game Stuck)
7. Ball is Out
8. Goal

3. Presentation Procedure

Within no more than one minute before the presentation, calibration of extrinsic camera parameters will be done for two cameras (color calibration will be performed beforehand). As far as the software detects field surface and landmarks, the calibration process is done very quickly. Finally, the software performance is demonstrated by detecting number of above mentioned penalties.