DETECTING LASER SPOT IN SHOOTING SIMULATOR USING AN EMBEDDED CAMERA

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Abstract- This paper presents the application of an embedded camera system for detecting laser spot in the shooting simulator. The proposed shooting simulator uses a specific target box, where the circular pattern target is mounted. The embedded camera is installed inside the box to capture the circular pattern target and laser spot image. To localize the circular pattern automatically, two colored solid circles are painted on the target. This technique allows the simple and fast color tracking to track the colored objects for localizing the circular pattern. The CMUCam4 is employed as the embedded camera. It is able to localize the target and detect the laser spot in real-time at 30 fps. From the experimental results, the errors in calculating shooting score and detecting laser spot are 3.82% and 0.68% respectively. Further the proposed system provides the more accurate scoring system in real number compared to the conventional integer number.

Index terms*:* Shooting simulator, laser spot, embedded camera, color tracking, CMUCam4.