Paper Title: Soccer Player Detection and Soccer Team Classification using GoogLeNet and Histogram Analysis

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Abstract

Machine learning-based system are widely used in sport engineering including offside events in football. A challenge of technology applied into soccer sport is to improve performance of the Video Assistant Referee (VAR) technology. In this paper, we proposed a method combining player detection and team classification for soccer images. We used the GoogLeNet deep learning and histogram analysis technique for player detection and classification from a single image. The experiment is done to measure the performance of the player detection and team classification. 710 images and 457 images are used as input for player detection and team classification, respectively. For player detection performance, the accuracy rate is 72.68%, and sensitivity rate is 74.68%. For team classification performance, the accuracy rate is 90.43%, sensitivity rate is 76.15%, and specificity rate is 96.03%. Our method demonstrates satisfactory performance.