Abstract

Football analysis can improve team performance and also improve league competition levels. By manually conducting analysis coupled with the increasing amount of existing video data, the analysis process is less efficient because many parameters must be evaluated by experienced resources and experts in football analysis. Therefore, this study focused on developing a system that could automatically aid football analysis based on video clips by calculating ball possession and number of passes. This study used a model based on object detection, tracking and classification with YOLOv8, which is part of the application of convolutional neural networks. The challenge to a detection model is objects with small resolutions and overlapping objects that cover other objects or occlusion. From the test scenarios, the trained detection model gets a precision of 96% for the ball object and 97% for the player object, a recall of 95% for the ball object and 97% for the player, and mAP of 95% for the ball object and 98% for the player object.

Keywords: *football video clip analysis, player and ball object detection, video processing, YOLOv8*