

TOWARDS A ROBUST AND ACCURATE VIDEO BASED PLAYER DETECTION AND TRACKING IN SOCCER

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Recently, the field of performance analysis in sport became more and more sophisticated. Computerized technologies are commonly used nowadays to collect a lot of data during sports, for instance during invasion games (e.g. soccer) or net and wall games (e.g. tennis). This enables the collection of huge amounts of data for which appropriate methods are needed to be analyzed and to be explored thoroughly. One particular technology that has become part of nearly everyday soccer analyses are tracking systems. Such systems gather information on each player on the soccer pitch several times per second. One type of tracking systems is based on extracting the positional information from video footage. However, such systems often work badly and require time consuming human interaction in order to correct errors. However, video based tracking systems are appropriate for soccer since the players do not have to wear any (maybe annoying) additions which is necessary for other types of tracking systems. The aim of this proposed project is to develop a robust and nearly completely automatic video based tracking system. This also includes the validation of the outcome of the player detection and tracking. The partners at the University of Vienna and the Zhejiang University complement each other very well and, thus, form a well suited working group for this project. Whereas the colleagues at the Zhejiang University are experts in the field of computer vision and developed a first version of video based tracking system that needs to be further developed and optimized, the colleagues at the University of Vienna are experts in validating tracking systems, in particular ones that are used for soccer. Thus, the colleagues at the University of Vienna will collect video footage of soccer matches and training sessions and, additionally, the respective positional information of the players using the radar based tracking system LPM that they own and have successfully validated. The video footage will be used by the colleagues at the Zhejiang University to further develop and to improve their video based tracking system. The positional data collected by the LPM system will be used to validate the positions resulting from the video based tracking system against it. Besides the tracking algorithm the colleagues at the Zhejiang University develop a software that enables users to visually inspect the tracking results, including options to correct possible errors, which however should occur rarely. The future collaboration between the two partners will aim at adding analysis methods to the software that will render the software quite appropriate to be used in scientific applications as well as in daily work practitioners such as soccer analysts at clubs or federations.