

COMPUTER VISION BASED AUTOMATED PLAYER TRACKING IN RUGBY

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Declaration

I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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Name of Supervisor: Dr.Amal Shehan Perera

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Abstract

Sports related analytics have become a main component of the present professional sporting domain. Teams continuously rely on the knowledge provided by analytics systems to gain a competitive edge over the opposing team. One of the main aspects of sports analytics is automated player tracking which can be achieved by computer vision based techniques by analyzing video footage of sporting events. Multiple object tracking in itself is a non trivial problem due to the large number of variables involved. This is further amplified by the high number of occlusions, trajectory changes that occur in a highly physical sport such as Rugby. We set out to solve the problem of automated player tracking using a tracking by detection approach. We make use of an object localisation model named YOLO and retrain it to suit the specific scenarios in Rugby. In order to solve the data association problem we compute an appearance based metric using an identity embedding encoder network. A Kalman filter is used along with the appearance based metric to establish the associations between tracks and detections. We conduct several experiments to evaluate the implemented solution and report the results. We discuss the limitations, further improvements and areas that present further research opportunities.

Thesis Supervisor: Dr. Amal Shehan Perera

Title: Senior Lecturer

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