INFORMATICS INSTITUTE OF TECHNOLOGY

In Collaboration with

UNIVERSITY OF WESTMINSTER, UK

University of Westminster, Coat of Arms

CricGuru- Cricket Batting Analysis for Sri Lankan Players Using Deep Neural Networks

A dissertation by

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w1761213 / 2019182

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May-2023

Submitted in partial fulfilment of the requirements for the BSc (Hons) Computer Science degree at the University of Westminster.

Abstract

Cricket is one of the most popular sports in Sri Lanka, not only between the adults but within the kids and youngsters too. Cricket plays a vital role among the sports in Sri Lanka. However, due to the current situation of the country a shortage of professional cricket batting coaches has been occurred which causes a major challenge to the upcoming players. Due to this shortage the probability of the players getting injured without proper guidance and due to incorrect cricket batting techniques and movements also have risen up. Since it is very important to be aware about the injuries that can occur and correctness about their cricket batting techniques and movements.

Different research projects have been carried out on batting technique analysis and classifying cricket batting shots in past years. But none of the systems were implemented with the purpose of analysing the side view angle of a batsman without any external sensors or any IoT device and identify the correctness of the shot by spreading awareness about the injuries that may occur using a video footage for both right-hand players and left-hand players for indoor purposes and outdoor purposes using deep learning and pose estimation. OpenPose with COCO dataset has used for the pose estimation and author has followed a transfer learning approach with the use of a modified ResNet50 model for the classification.

All the implemented models were tested using testing datasets and models were able to achieve more than 95% accuracy for each model. The implemented approach could be further improved and can be applied in different domains.

Keywords: Deep Learning, Pose Estimation, Transfer Learning, Convolutional Neural Network, Image Classification, Cricket Batting, Injuries, Techniques and Movements.

Subject Descriptors:

- Computing methodologies – Computer Vision.

- Computing methodologies – Pose Estimation.

- Computing methodologies – Neural Networks.

- Applied computing – Cricket Batting