Cricket Shots Classification Comparison of VGG16, ResNet50 and EfficientNet, A novel approach to classifying batting techniques using CNN Architecture

FINAL THESIS

Mudasser Ashraf

41520010232

INFORMATICS STUDY PROGRAM

FACULTY OF COMPUTER SCIENCE

INTERNATIONAL UNDERGRADUATE PROGRAM

UNIVERSITAS MERCU BUANA

JAKARTA

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Submitted as one of the requirements for dissemination in the proposal defense

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OWN WORK STATEMENT PAGE

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Title : Cricket Shots Classification Comparison of VGG16, ResNet50 and EfficientNet, A novel approach to classifying batting techniques using CNN Architecture.

I declare that this Research Proposal is my own work and not plagiarized, and all sources, both cited and referred to, have been accurately acknowledged. If it is found that there is plagiarism in my Research Proposal, I am ready to face the academic sanctions applicable at Mercu Buana University.

Jakarta, 24 Mai, 2024

Mudasser Ashraf

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PREFACE

Praised be to the Almighty God for His mercy and guidance, enabling the completion of the thesis proposal titled "Cricket Shots Classification Comparison of VGG16, ResNet50, and EfficientNet." This proposal fulfills a prerequisite for obtaining a bachelor's degree in the S-1 Study Program International Class within the Informatics Department, Faculty of Computer Science, Universitas Mercu Buana Jakarta. This research explores a novel approach to classifying batting techniques using CNN architecture.Acknowledging human imperfections, I recognize that this research may contain errors due to my limited knowledge and experience. I am grateful for the significant guidance and support received from various parties, especially Mr. Ir. Emil R. Kaburuan, Ph.D., IPM., ASEAN Eng., my supervisor, for invaluable advice and

I realize that, without the help and guidance of various parties, from the period of my studies until the preparation of this thesis, it would have been very difficult for me to complete this report. Therefore, I would like to express my gratitude to:

1. [Name of Rector], Rector of Mercu Buana University.
2. Dr. Bambang Jokonowo, S.Si., M.T.I, Dean of the Faculty of Computer Science.
3. Dr. Bagus Priambodo, ST., M.T.I, Head of the Informatics Study Program.
4. Emil Robert Kaburuan, S.T., M.A., Ph.D, my thesis supervisor, for providing time, effort, and thoughts to guide me in the preparation of this thesis.
5. [Name of Examiner], my thesis examiner, for the corrections, guidance, and input provided.
6. And to everyone else who has contributed to this work, as deemed appropriate by the writer, with a brief mention.

Finally, I hope that God Almighty will reward the kindness of all those who have helped. May this thesis report bring benefits to the development of knowledge.

Jakarta, 20 Mei 2024

Mudasser Ashraf

STATEMENT OF APPROVAL FOR THE PUBLICATION OF FINAL PROJECT FOR ACADEMIC PURPOSES

As a member of the academic community at Universitas Mercu Buana, I, the undersigned:

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For the advancement of knowledge, hereby grant permission and approve the provision of the Non-Exclusive Royalty-Free Right to Universitas Mercu Buana for my scholarly work titled above, along with its accompanying materials (if necessary).

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I make this statement sincerely for the record.

Jakarta, May 24, 2024

(Mudasser Ashraf)

ABSTRACT

Name : Mudassar Ashraf
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Title Research Proposal : Cricket Player Performance Analysis through Image Recognition: Categorizing Batting Techniques and Predicting Player Dismissals

This thesis looks at the use of image recognition to classify cricket shots, with a particular focus on classifying batting strategies. The study analyzes cricket photos and extracts useful insights by using VGG16, ResNet50 and EfficientNet , all of which are Convolutional Neural Networks (CNNs) with TensorFlow, a well-known machine-learning framework. The suggested process includes setting up TensorFlow, importing necessary libraries, and creating directories for various batting strategies. ImageDataGenerator is used for preprocessing and data augmentation. To provide reliable model training, training, and validation data are loaded and preprocessed according to a subset split. Convolutional and pooling layers are built into a CNN model architecture, which results in a fully connected dense layer for classification. The models are integrated seamlessly into the working environment and the model is trained and evaluated subsequently, with performance metrics recorded. This research contributes to the burgeoning field of sports analytics by introducing an innovative approach to cricket shots classification. The application of image recognition techniques offers a nuanced understanding of batting techniques and enhances the ability to predict player dismissals. The abstract concludes with an invitation for further exploration and validation of the proposed methodology in the broader context of sports science.

Keywords: : Cricket, Image Recognition, Convolutional Neural Networks, VGG16, ResNet50, TensorFlow, Keras, EfficientNet

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