



**Innovation and Technology in Sports** pp 233–243

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# Badminton Player's Shot Prediction Using Deep Learning

[Farzeen Ashfaq](#) , [N. Z. Jhanjhi](#)  & [Naveed Ali Khan](#)

Conference paper | [First Online: 18 April 2023](#)

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## Abstract

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The study of object tracking has substantially advanced thanks to the development of deep learning visual recognition and tracking methods. However, because to the additional difficulties they provide, such as the

difficulty in tracking small, swiftly moving objects like a ball or shuttlecock due to the fast camera movement and the existence of swings and spins, sports videos are still understudied. To access these massive archives of sports video data and automatically tag and analyse its properties, such as player performance and stroke and shot analysis, an effective end-to-end solution is needed. The aim of this research is to create a complete deep learning based model that can do object detection and tracking in sports movies as well as classify the played stroke. We employed the SF-YOLOv5 model, a lightweight model for the identification of swiftly moving small objects, for this. Then, we utilised the Deep-Sort algorithm and zero shot learning to follow the objects that had been detected. Finally, we classified the played shot using the CNN classifier.

### Keywords

**Visual object tracking**      **Player stroke prediction**

**Zero Shot learning**      **Sports analytics**

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Khan: The author contributed equally to this work.

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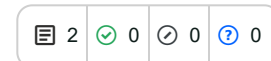
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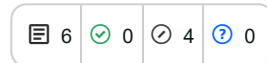
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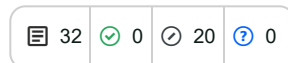
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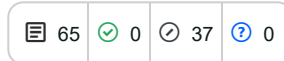
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## Author information

Authors and Affiliations

**School of Computer Science, SCS, Taylor's University Lakeside  
Campus, 47500, Subang Jaya, Malaysia**

Farzeen Ashfaq, N. Z. Jhanjhi & Naveed Ali Khan

Corresponding authors

Correspondence to [Farzeen Ashfaq](#) or [N. Z. Jhanjhi](#).

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DOI

[https://doi.org/10.1007/978-981-99-0297-2\\_19](https://doi.org/10.1007/978-981-99-0297-2_19)

Published

18 April 2023

Publisher Name

Springer, Singapore

Print ISBN

978-981-99-0296-5

Online ISBN

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