

सत्यमेव जयते
Department of Science & Technology
Govt. of India

Technology Enabling Centre

Arc

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Hoops

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Abstract:

Traditional basketball refereeing relies heavily on human judgment, which can lead to inconsistencies and errors. This project aims to develop a system that uses computer vision and machine learning to detect fouls such as travel, double dribble, and carry with unparalleled accuracy. The system will enable instant feedback on foul calls and referee decisions, ultimately improving the fairness and integrity of basketball games.

Problem Statement

Traditional basketball refereeing relies heavily on human judgment, which can lead to inconsistencies and errors. This project aims to develop a system that uses computer vision and machine learning to detect fouls such as travel, double dribble, and carry with unparalleled accuracy. The system will enable instant feedback on foul calls and referee decisions, ultimately improving the fairness and integrity of basketball games.

hetype Expo 2024

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Eye(Automated Basketball Refereeing System)

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which can be subjective and prone to errors. HoopsEye addresses this challenge by ensuring accuracy and efficiency. Through advanced image recognition algorithms, HoopsEye can analyze video feeds in real-time to make quick and accurate calls on foul shots, three-pointers, and other key plays.



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ided by: Dr. Salman Abdul Moiz

lenge by providing an automated system that detects
sEye tracks the movement of the basketball in real-time,

Traditional basketball refereeing relies on subjective human

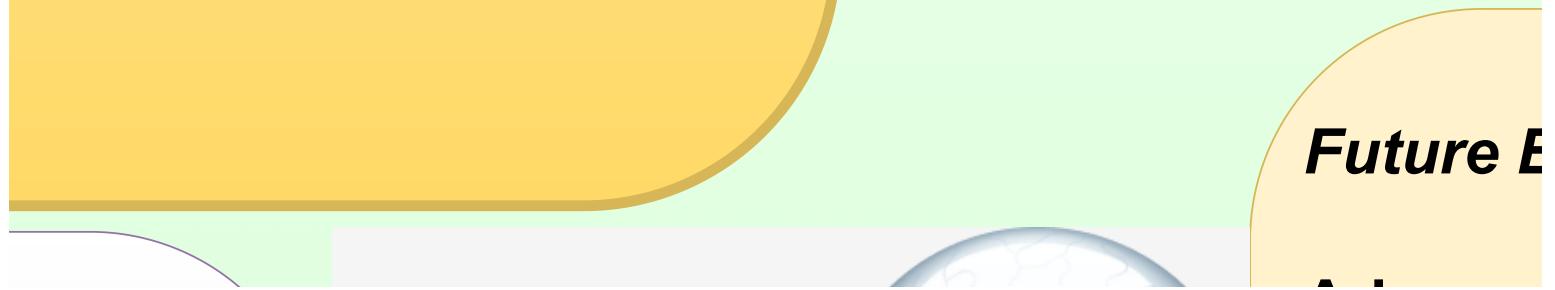
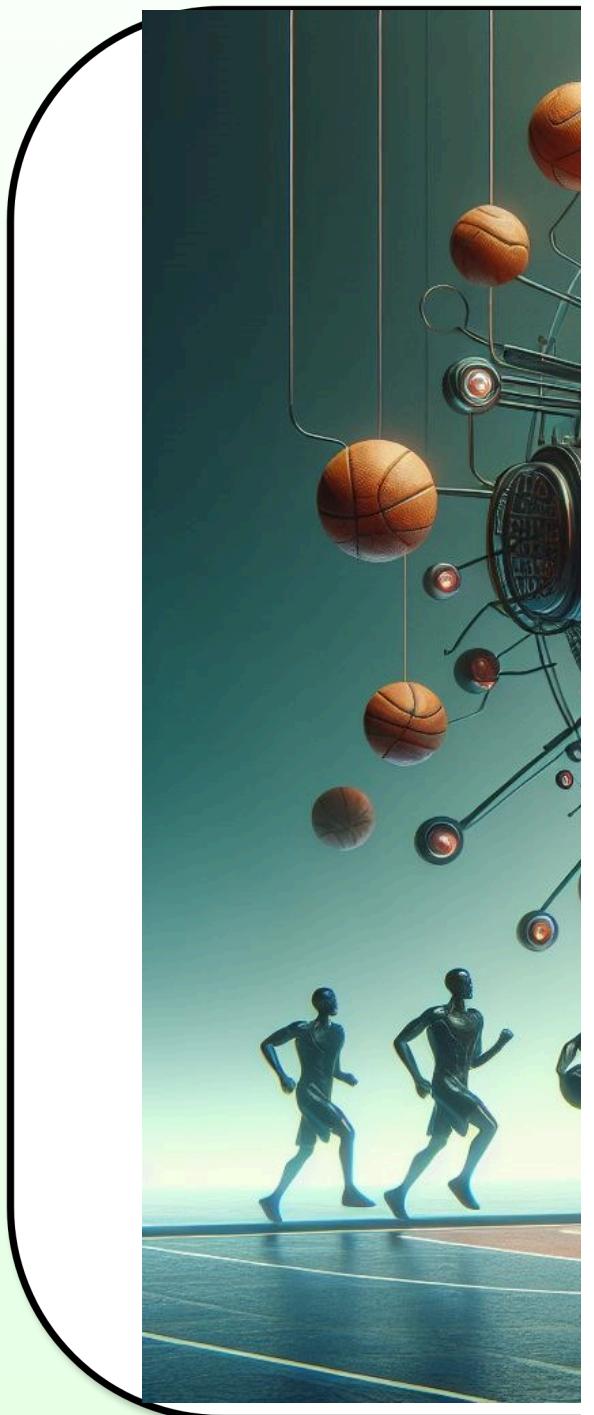
System Design- Python 3.10.13

Tools used for webpage

- 1) Flask framework version 3.0.2
- 2) Python 3.10.13
- 3) SQLAlchemy 2.0.29 (database system)
- 3) HTML
- 4) CSS
- 5) Javascript
- 5) jQuery
- 6) Bootstrap



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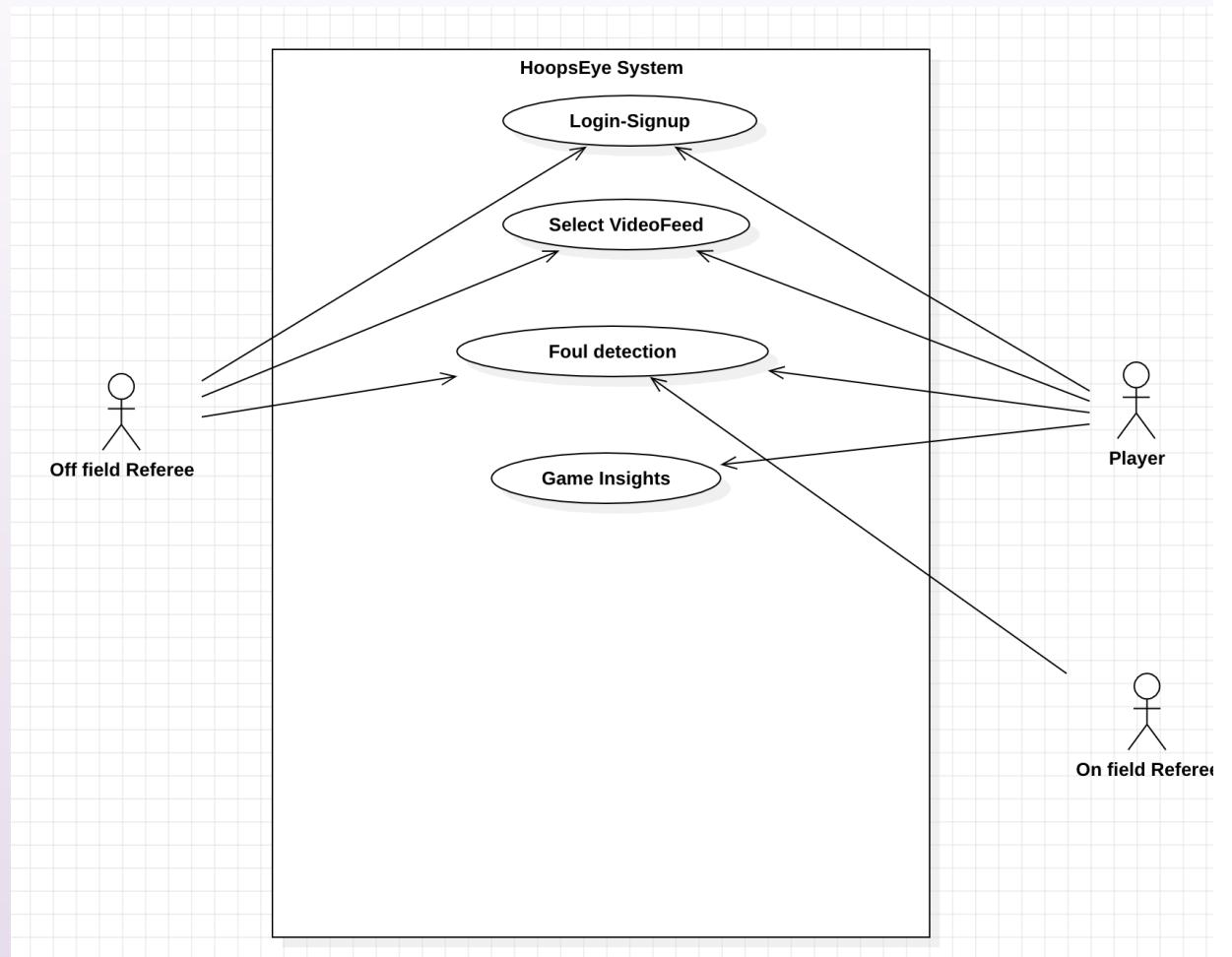


omated solution for accurate and efficient foul detection.



Enhancements

Use Case Diagram



Hoops



Conclusion:

This design when implemented with the given future enhancements will ease the efforts of refereeing a basketball game and also improve players' performances.

Advanced analytics insights in
Integration integration player management
advance

- Develop

provide detailed statistics

References

1. <https://docs.ultralytics.com/>
2. <https://flask.palletsprojects.com/en/3.0.x/>
3. <https://forum.opencv.org/t/useful-links-read-first/1842>
4. <https://github.com/maxcountryman/flask-uploads>

Advanced Analytics: Incorporate advanced AI features to provide deeper insights into player performance.

Integration with Wearable Technology: Explore integration with wearable devices to capture movement data in real-time, enabling detailed performance analysis and injury prevention.

Develop a mobile application for HoopsEye to

provide on-the-go access to game information, scores, and notifications.



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