

Institution Details



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| **Province** | Sindh | **City** | Karachi |
| **Institution** | National University of Computer and Emerging Sciences (FAST-NU) | **Campus** | Karachi |
| **Department** | Artificial Intelligence | **Degree Level** | BS |
| **Degree Program** | Artificial Intelligence | **Telephone** |  |
| **Fax** |  | | |

Supervisor Details



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| **Name** | Basit Jasani | **Gender** | Male |
| **Mobile** | +92 345 3603970 | **Office No** |  |
| **Email** | basit.jasani@nu.edu.pk | **Designation** |  |
| **Qualification** |  | | |

Co-Supervisor Details



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| **Name** |  | **Gender** |  |
| **Mobile** |  | **Office No** |  |
| **Email** |  | **Designation** |  |
| **Qualification** |  | | |

Head of Department Details



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| **Name** | Dr. Mohammad Rafi | **Mobile No.** | - |
| **Email** | muhammad.rafi@nu.edu.pk | **Gender** | Male |

Project Details



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| **Project Title** |  | | |  | |  |
| **Group Details** | **Member 1 Name:** Shaikh Abdul Rafay    **Member 1 Roll#:** 21K 3051 | | **Member 2 Name:** Rayyan Ahmed    **Member 2 Roll#:** 21K 3079 | | **Member 3 Name:** Minaal Alam    **Member 3 Roll#:** 21K 3072 |  |
|  |  |  | |  | |  |
| **Project Area of** | Deep Learning, Artificial Intelligence, Web | | | | |  |
| **Specialization** |  |  | |  | |  |
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| **Project Start** | 2nd September 2024 | **Project End Date** | |  | |  |
| **Date** |  |  | |  | |  |
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| **Project** | Cricket matches, depending on the format, can last anywhere from several hours to five days, making post-match editing a time-consuming process. My Final Year Project (FYP) is focused on automating the generation of cricket highlights using cutting-edge technologies like computer vision and Optical Character Recognition (OCR). The goal is to develop a system that takes cricket broadcast footage as input and automatically extracts key moments—such as boundaries, sixes, and wickets—without the need for manual intervention. This innovation will drastically reduce the workload of video editors and expedite highlight generation for cricket broadcasts.  In addition to highlights generation, the project integrates multiple other features into a comprehensive web-based platform. One key feature is a chatbot powered by Natural Language Processing (NLP), allowing users to interact with the platform by asking questions about the ongoing match in everyday language. For instance, users could inquire, "Who just got out?" or "How many runs are needed to win?" and receive accurate, real-time responses.  Another significant aspect is the inclusion of a generative commentary system. Instead of relying on original match commentary, the platform will use machine-generated commentary to narrate the events in the extracted clips, offering a unique viewing experience.  Lastly, a machine learning-based score prediction model will provide users with insights into possible match outcomes, enhancing their engagement and understanding of the game. All these features are designed to make cricket highlights more accessible, interactive, and engaging for a broad audience. | | | | |  |
| **Summary (less** |  | | | | |  |
| **than 2500** |  | | | | |  |
| **characters)** |  | | | | |  |
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| **Project** | The primary objective of this project is to address the inefficiencies in the manual process of cricket highlights generation. Traditional methods of extracting key moments from cricket matches require editors to spend hours reviewing footage to identify significant events such as boundaries, sixes, wickets, and other match-defining moments. Given that cricket matches can span from a few hours to several days, this method is both time-consuming and resource-intensive.  Additionally, there is a growing demand for faster content delivery in the digital age, where audiences expect immediate access to key moments, often in real-time or shortly after they occur. This project seeks to meet that demand by using computer vision and OCR technology to automate the process of highlights generation, reducing the time it takes to deliver high-quality sports content.  Another key issue this project addresses is the lack of interactive features in current highlight systems. Viewers often have questions about the ongoing match, but existing platforms do not provide a way to interact with the content in real-time. By integrating a chatbot powered by NLP, the project aims to enhance the viewer experience by allowing users to ask questions such as “Who got out?” or “How many runs are needed to win?” and receive real-time, relevant answers.  The project also tackles the problem of creating engaging content for various fan demographics. Traditional commentary is often fixed and may not cater to different viewer preferences. By implementing generative commentary, the system will offer personalized, AI-driven narration, providing a fresh and customizable viewing experience.  Finally, this project aims to provide predictive insights into cricket matches. Existing highlight systems do not offer any analytical tools for predicting match outcomes. The inclusion of a machine learning-based score predictor addresses this gap by offering fans statistical insights into possible outcomes, further enhancing their engagement with the game. | | | | |  |
| **Objectives (less** |  | | | | |  |
| **than 2500** |  | | | | |  |
| **characters)** |  | | | | |  |
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| **Literature Review / Background Study** | (This section contains all the literature review or background study you have done for your project. All the references must be sequenced acc to References section) | | | | |  |
| **Project Implementation Method (less than 2500 characters)** | (This section contains your overall system architecture and details of your methodology i.e., your approach towards proposing solution to the problem defined in Project Objectives) | | | | |  |
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| **Benefits of the** | The automated cricket highlights generation system will revolutionize the way post-match content is processed and delivered. Currently, the task of editing and compiling key moments from cricket matches is a manual and labor-intensive process, often requiring hours of work to condense matches that can last anywhere from 5 hours to 5 days. By leveraging computer vision and OCR technologies, this project will automate the extraction of significant events like boundaries, sixes, and wickets, thereby dramatically reducing the time and resources needed for highlight generation. This will streamline workflows for broadcasters, content creators, and sports media companies, making the process more efficient.  One major benefit is the democratization of content creation. Smaller platforms or independent content creators who do not have access to large editing teams will be able to produce high-quality cricket highlights automatically, making cricket content more accessible to a broader audience. The generative commentary feature also allows for a personalized viewing experience, moving away from traditional commentary to a tailored, AI-driven narrative.  The integration of a Chabot powered by NLP enhances user interaction by allowing casual viewers to ask match-related questions in real-time. This is particularly valuable in an age where fans expect instant updates and personalized engagement. This feature not only improves user experience but also opens up new possibilities for fan engagement during live broadcasts.  In terms of research contributions, the project demonstrates how AI, particularly computer vision and OCR, can be applied in the field of sports broadcasting to automate tedious tasks, a use case with significant commercial value. The machine learning-based score prediction model introduces an innovative way to provide fans with analytical insights into match outcomes, offering a layer of engagement beyond traditional viewing. This project showcases the potential of AI to revolutionize sports broadcasting, making it more efficient, engaging, and scalable. | | | | |  |
| **Project (less** |  | | |  | |  |
| **than 2500 characters)** |  | | | | |  |
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| **Technical** | (This section contains the technical description of each of the modules that is to be delivered). | | |  |
| **Details of Final Deliverable (less than 2500 characters)** |  | | |  |
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| **Final Deliverable of the Project** | (This section explains/lists which modules will be presented by you at the conclusion of this project) | | |  |
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| **Core Industry (Optional)** | Cricket |  |  |  |
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| **Other** |  |  |  |  |
| **Industries**  **(Optional)** |  |  |  |  |
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| **Core** | (E.g., Flutter, Blockchain, .NET) |  |  |  |
| **Technology** |  |  |  |  |
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| **Other** |  |  |  |  |
| **Technologies (Optional)** |  |  |  |  |
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| **Sustainable** |  |  |  |  |
| **Development** |  |  |  |  |
| **Goals**  **(Optional)** |  |  |  |  |
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| References     |  |  |  | | --- | --- | --- | | 1. Automated Commentary    1. Peter Andrews, Oda Elise Nordberg, Nj˚al Borch, Frode Guribye, and Morten Fjeld. Designing for automated sports commentary systems. In Proceedings of the 2024 ACM International Conference on Interactive Media Experiences, IMX ’24, age 75–93, New York, NY, USA, 2024. Association for Computing Machinery.    2. Alec Cook and Oktay Karaku¸s. Llm-commentator: Novel fine-tuning strategies of large language models for automatic commentary generation using football event data. Knowledge-Based Systems, 300:112219, 2024.    3. Jakub Ko´scio. Enhancing live commentary generation in soccer video games through event prediction with machine learning methods, June 2024. 2. Highlights generation    1. D. Gaikwad, S. Sarap, and Dinesh Dhande. Video summarization using deep learning for cricket highlights generation. Journal of Scientific Research,14:533–544, 05 2022.    2. Pushkar Shukla, Hemant Sadana, Apaar Bansal, Deepak Verma, Carlos Elmadjian, Balasubramanian Raman, and Matthew Turk. Automatic cricket highlight generation using event-driven and excitement-based features. In 2018 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), pages 1881–18818, 2018.    3. D. Agarwal, S. Singh, and P. Shambharkar. Automatic annotation of events and highlights generation of cricket match videos. International Journal of Innovative Technology and Exploring Engineering, 8:3878–3881, 09 2019. 3. Stat Finder and Score Prediction    1. Mazhar Javed Awan, Syed Arbaz Haider Gilani, Hamza Ramzan, Haitham Nobanee, Awais Yasin, Azlan Mohd Zain, and Rabia Javed. Cricket match analytics using the big data approach. Electronics, 10(19), 2021.    2. F. Bharadwaj, A. Saxena, R. Kumar, R. Kumar, S. Kumar, and ˇZ. Stevi´c.Player performance predictive analysis in cricket using machine learning.Revue d’Intelligence Artificielle, 38(2):449–457, 2024 |  |  | | |  |  |  |
| Project Key Milestones | |  |  |  |
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| **Elapsed time in (days or weeks or month or quarter) since start of the project** | | **Milestone** | **Deliverable** |  |
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Project Equipment Details



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| **Item(s) Name** | **Type** | **No. of Units** | **Per Unit Cost (in Rs)** | **Total (in Rs)** |
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