

**Dr. Vishwanath Karad MIT-World Peace University (MIT-WPU)**

**School of Computer Science and Engineering**

**T.Y.B.Tech.CSE**

**T.Y. Semester-VI (24-25) Seminar Synopsis**

| **Name of Student** | **Ved Avinash Kulkarni** |
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| **PRN No.** | **1032222234** |
| **Roll No.** | **54** |
| **Panel No.** | **C** |
| **Date** | **4/2/2025** |
| **Topic** | **AR Enhanced Data Science for Sports Analysis** |
| **Abstract** | Data science plays a crucial role in maximizing the impact of AI (Artificial Intelligence), VR (Virtual Reality), AR (Augmented Reality), and DV (Data Visualisation) in sports. It provides the framework for extracting meaningful insights from the vast amounts of data generated by these technologies. Data scientists utilize statistical modeling, machine learning algorithms, and data mining techniques to process raw data from various sources, including wearable sensors, video feeds, and player tracking systems. This processed data fuels AI models for performance prediction, injury risk assessment, and personalized training programs. For example, data science can identify patterns in player movements and physiological data to predict potential injuries before they occur, allowing for proactive intervention. Furthermore, data-driven insights can inform tactical decisions during games, optimize training regimes based on individual player needs, and personalize the fan experience by tailoring content and interactive features. Data visualization, a core component of data science, translates complex datasets into easily understandable formats, enabling coaches, athletes, and fans to grasp key performance indicators and trends. By integrating data science expertise, sports organizations can unlock the full potential of these technologies, moving beyond simply collecting data to gaining actionable intelligence that drives performance enhancement and fan engagement. |
| **Keywords** | Augmented Reality, Sports Performance Analysis .Computer Vision, Real-Time Data Visualization, Immersive Training Technologies |
| **References** | [1] Yufei Liu, VE Sathishkumar, and Adhiyaman Manickam. 2022. Augmented reality technology based on school physical education training. Comput. Electr. Eng. 99, C (Apr 2022). <https://doi.org/10.1016/j.compeleceng.2022.107807>  [2] Guowei Zhang. 2025. Research on Efficient Sports Training System Based on Virtual Reality Technology. In Proceedings of the 2024 3rd International Conference on Algorithms, Data Mining, and Information Technology (ADMIT '24). Association for Computing Machinery, New York, NY, USA, 219–223. <https://doi.org/10.1145/3701100.3701145>  [3] T. Lin, Z. Chen, J. Beyer, Y. Wu, H. Pfister and Y. Yang, "The Ball is in Our Court: Conducting Visualization Research With Sports Experts," in IEEE Computer Graphics and Applications, vol. 43, no. 1, pp. 84-90, 1 Jan.-Feb. 2023, doi: 10.1109/MCG.2022.3222042.  keywords: {Sports;Visualization;Data visualization;Mixed reality;Games;Streaming media;Real-time systems;Expert systems},  [4] Kittel, A., Lindsay, R., Le Noury, P., & Wilkins, L. (2024). The Use of Extended Reality Technologies in Sport Perceptual-Cognitive Skill Research: A Systematic Scoping Review. Sports Medicine-Open, 10(1), 128.  [5] Fridhi, A., Bali, N. Augmented Reality in Sports Education and Training for Children with an Autism Spectrum Disorder. *Neurophysiology* 54, 73–79 (2022). https://doi.org/10.1007/s11062-023-09937-z |

**Seminar Guide Name (Sign with date) :**

**Seminar Coordinator Name (Sign with date) :**