International Journal of
INTELLIGENT SYSTEMS AND APPLICATIONS IN ENGINEERING
ISSN:2147-6799 www.ijisae.org Original Research Paper

Enhanced Method in Artificial Intelligence and Machine Learning for Enhanced Computer Vision Application

[1]Deepali Virmani, [2]Abdelbasset Barkat, [3]Dr Lalit Mohan Trivedi, [4]Dr B Jaison, [5]Dr P. Kalarani, [6]Bhabani Sankar Gouda

Submitted: 06/05/2024 **Revised**: 19/06/2024 **Accepted**: 26/06/2024

Abstract: For computers to be able to see, researchers are studying computer vision. Even the most general computer vision problems include drawing conclusions about the environment from images. It draws from a variety of disciplines and might be considered a subfield of AI and ML, which employ both generalizable and domain-specific learning strategies. The use of techniques from other fields, such as computer science and engineering, can make interdisciplinary research appear disorganized. A sophisticated ensemble of generic machine learning algorithms can be needed to handle a different visual problem than a hand-crafted statistical technique. Modern science has revolutionized computer vision. Exciting and often chaotic, frontier areas often have few trustworthy authorities. Some theories work in theory but not in practice, while many excellent ideas are theoretically unfounded. A lot of the developed world is spread out and can look like it's out of reach. These days, deep learning, machine learning, and computer vision all work well. The cornerstones of any school are its teaching and learning programmes. Students' actions and presence in class are closely observed alongside their academic progress. Classroom monitoring, emotion recognition, appraisal, and real-time attendance tracking were some of the computer vision applications studied in this research. A wide range of viewpoints have explored computer vision. Digital picture processing, pattern identification, machine learning, and computer graphics are all a part of it, in addition to raw data recording. Because of its extensive application, many researchers include it into a wide range of disciplines.

Keywords: *Computer Vision Applications, Artificial Intelligence, Machine Learning, Enhanced Method.*

1. Introduction

The fields of medicine, entertainment, automaton design, and self-driving automobiles are among the most common uses of computer vision. Image sorting, limitation, and identification are key to numerous of these uses. The ability of Convolutional Neural Networks (CNNs) to excel in a number of leading picture identification tasks and frameworks has been made possible by recent advancements in the field. Convolutional neural networks (CNNs) underpin computer vision deep learning. Deep Neural Networks (DNN) improve picture recognition in computer vision computations. CNNs, a subclass of Deep Neural Networks, decode visual signs. It organises NLP and machine vision data. Multiple structural elements can build convolutional neural networks. This article briefly discusses convolution, pooling, and fully linked layers. Deep learning and neural network methods follow. Convolutional Neural Networks, their development, and medical and technical applications are covered in the book.

1.1. Understanding Computer Vision

Before we discuss applications, let's define computer vision: a subfield of AI and a branch of ML that allows machines to grasp and interpret visual data from the world like humans. To enable robots to analyse, understand, and make judgements based on visual information, computer vision automates repetitive operations that the human visual system can execute. It goes beyond visual perception to understand context and make sense of what's being seen, making it important in healthcare, industry, security, and transportation.

[1]*Professor Vivekananda Institute of Professional Studies Technical Campus deepali.virmani@vips.edu*
[2]*Laboratory of Informatics and its Applications, Faculty of Mathematics and Computer Science, University of M'sila, M'sila 28000, Algeria abdelbasset.barkat@univ-msila.dz*
[3]*Department of Applied Sciences and Humanities (Mathematics) Moradabad Institute of Technology Moradabad Up 244001 drlmtmit@gmail.com*
[4]*Professor Department of Computer Science and Engineering R.M.K. Engineering College Kavarapettai -601206 bjn.cse@rmkec.ac.in*
[5]*Assistant Professor Department of Ct and It Kongu Arts and Science College (Autonomous) Erode-638 106 meet.kalaram@gmail.com*
[6]*Computer Science and Engineering, NIST Institute of Science and Technology (Autonomous), Affiliated Biju Patnaik University of Technology, Rourkela, Odisha, India Email: Bhabani012@Gmail.Com*

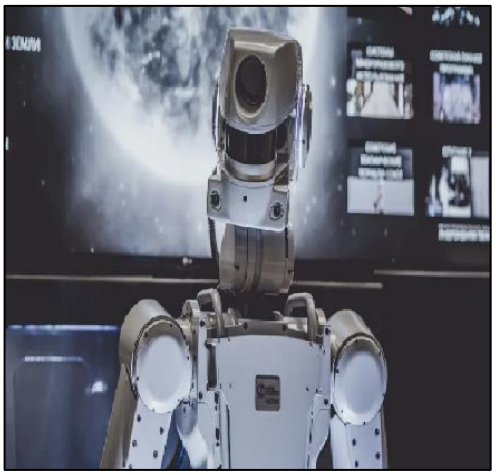

Fig 1: Computer Vision

A three-step procedure underpins any computer vision system. The system first acquires a picture or video using cameras or other devices. Second, handle this visual data by resizing, cropping, or filtering the image for best results. Finally, machine learning algorithms recognise patterns, objects, and features in the image. The system can then make decisions or predictions from these interpretations.

Computer vision technology has advanced greatly due to machine learning and deep learning.

1.2. Critical Components of Computer Vision

- Image Acquisition
- Image Processing
- Feature Detection and Extraction
- Pattern Recognition and Classification
- Decision Making

1.3. Computer Vision Applications

Many different kinds of visual data can be extracted from digital images, videos, and other visual inputs using the artificial intelligence field known as computer vision. Among the crucial applications are:

- Facial Recognition
- Self-Driving Cars
- Medical Imaging Analysis
- Industrial Automation
- Agricultural & Aquaculture Automation
- Retail
- Augmented Reality
- Surveillance
- Sports Analysis
- Robotics

These applications demonstrate the versatility of computer vision technology across various sectors, significantly impacting industries by enhancing efficiency, accuracy, and decision-making processes.

2. Literature Review

Dhivyaprabha, T. T., Subashini, (2016) The goal of this work is to show how logical principles for picture understanding may be extracted and applied using the newly developed Synergistic Fibroblast Optimisation (SFO) algorithm and popular current artificial learning methods. When testing the SFO algorithm, two different modes are employed: the Michigan approach and the Pittsburgh approach. Defining continuous data and verifying accuracy and error levels leads to optimal rule discovery.

Mahadevkar, S. V., Khemani (2022) In this research, we survey the literature on computer vision AI and trace the development of several machine learning approaches. Computer vision and predictive analytics are two areas that machine learning has the potential to improve. Because it provides such profound insight into potential future possibilities, this report will be useful for academics focusing on learning styles.

Liu B., Yu, L., (2023) The efficacy of applying deep learning and computer vision together is the main topic of this research. Building hierarchical neural networks, a key component of deep learning, allows for end-to-end feature learning and semantic image processing, marking a significant advancement in the field. When it comes to training deep learning algorithms, the successes in computer vision give a solid foundation.

Esteva, A., Chou, (2021) The extraordinary advancements in artificial intelligence (AI) over the past decade have shown that numerous industries, including healthcare, may get valuable insights from data processed using AI methods. In this article, we take a look back at how far medical imaging, medical video, and clinical deployment have come in the realm of contemporary computer vision techniques driven by deep learning.

3. Enhanced Methods in Artificial Intelligence for Advanced Computer Vision Applications

Computer vision has been greatly enhanced by the advent of artificial intelligence (AI), which has allowed robots to comprehend and interpret visual data more accurately and efficiently.

Fig 2: Artificial Intelligence (AI) in Advanced Computer Vision Applications

As demands for sophisticated computer vision applications grow across various domains such as healthcare, autonomous vehicles, surveillance, and augmented reality, there is a pressing need for enhanced methods in AI to further advance these capabilities. This article explores some of the cutting-edge techniques and methodologies that are propelling computer vision to new heights.

3.1. Deep Learning Architectures

When it comes to improving computer vision applications, deep learning is now indispensable. Image segmentation, object detection, and classification are just a few of the many applications where Convolutional Neural Networks (CNNs) have demonstrated exceptional performance. Recent advancements focus on enhancing the depth, width, and connectivity of neural networks to extract more complex features and improve accuracy. Architectures like ResNet, DenseNet, and Efficient Net are examples of deep networks that have pushed the boundaries of computer vision tasks.

3.2. Transfer Learning and Pre-trained Models

With the rise of transfer learning, it is now possible to use previously trained models to solve novel computer vision problems using sparse labelled data. The models have been fine-tuned for specific tasks using large-scale datasets like ImageNet, resulting in outstanding outcomes with reduced training durations. Techniques like domain adaptation further enhance the transferability of learned features across different domains, allowing for more robust and adaptable computer vision systems.

3.3. Generative Adversarial Networks (GANs)

GANs have revolutionized the generation of realistic images and data synthesis, offering valuable applications in computer vision. Beyond image generation, GANs are utilized for tasks like image-to-image translation, super-resolution, and style transfer. Conditional GANs enable the generation of images conditioned on specific attributes or classes, opening avenues for personalized and context-aware visual applications.

3.4. Attention Mechanisms

Attention mechanisms have gained prominence in improving the interpretability and performance of computer vision models. By dynamically weighting input features based on their relevance to the task at hand, attention mechanisms allow models to focus on salient regions of an image, enhancing both accuracy and efficiency. Transformer architectures, originally developed for natural language processing, have been adapted to vision tasks, demonstrating remarkable results in image recognition and captioning.

3.5. Self-Supervised Learning

Self-supervised learning approaches have emerged as a promising direction to address the challenge of acquiring labeled data for training computer vision models. By designing pretext tasks that leverage the inherent structure or semantics of data, self-supervised learning enables models to learn meaningful representations without explicit human annotation. Techniques such as contrastive learning, rotation prediction, and autoencoding have shown success in training robust feature representations for downstream vision tasks.

3.6. Reinforcement Learning in Vision

Reinforcement learning (RL) offers a framework for training agents to interact with visual environments and learn sequential decision-making policies. In computer vision, RL is employed in tasks such as robotic manipulation, object tracking, and navigation. By learning from feedback received through interactions with the environment, RL agents can adapt and improve their visual understanding over time, leading to more autonomous and adaptive systems.

Computer vision is advancing rapidly due to artificial intelligence, providing a wide range of applications with new capabilities. Computer vision systems are improving with deep learning architectures, transfer learning, GANs, attention mechanisms, self-supervised learning, and reinforcement learning. AI innovations will continue to transform how robots see and understand visuals as research advances.

4. The Relationship Between Machine Learning and Computer Vision

All these years later, artificial intelligence is still a hot topic because technology is constantly trying to imitate the human brain. To illustrate the path to these innovations, let's talk about how computer vision, machine learning, and artificial intelligence are interconnected. Under the broader topic of artificial intelligence (AI), these subfields include machine learning and computer vision. On the other hand, computer vision is closely related to artificial intelligence.

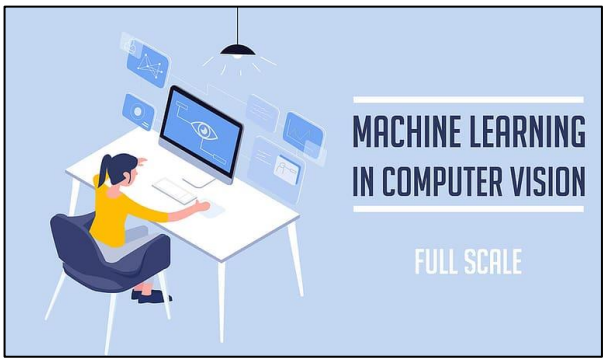

Fig 3: Computer Vision using Machine Learning

Machine learning and computer vision go hand in hand. Training computer vision systems becomes easier with machine learning. We provide efficient approaches to object focus, image processing, and computer vision. Included in machine learning is now computer vision. Everything required for digital imaging and video capture, sensing, and interpretation. The computer vision interpreting equipment and stage use machine learning.

The methodologies utilised in different fields illustrate that machine learning is expansive. Machine learning analyses digital recordings. Digital images and videos are computer vision's specialty. It has an impact on signal processing, neuroscience, information engineering, and physics. The huge gap between computer and biological vision concerns developers and companies. Image processing and analysis resemble computer vision. Another engaging component is needed to contrast. Lack of understanding of machine learning's project purpose disrupts entrepreneurs.

4.1. Tasks involving Computer Vision

Here at Full Scale, we are completely devoted to our clients' success. We can connect you with computer vision engineers that can assist your company with common tasks like motion analysis and recognition. In order to generate accurate results, our team of machine learning experts can acquire, process, and analyse digital images utilising a wide range of techniques. The following are examples of computer vision-based tasks:

4.1.1. Recognition in Computer Vision

Computer vision's recognition capabilities include the ability to detect, identify, and identify objects. Specialized recognition tasks include things like facial recognition, picture retrieval, and optical character recognition.

- Object recognition
- Machine learning approach
- Deep learning approach

4.1.2. Motion Analysis

In computer vision, motion analysis is the process of processing a digital video to extract data. An object's motion can be detected by basic processing. More sophisticated processing can follow an object's motion over time and identify its direction. It can be used for sports, motion capture, and gait analysis.

- Motion capture
- Gait analysis

4.1.3. Applications of Computer Vision using Machine Learning

The process of working with our clients begins with a consultation, assistance, and the development of computer vision-based solutions for practical issues. These are a few of the applications our specialists can work on while they evaluate the both thrilling and risky features of machine learning.

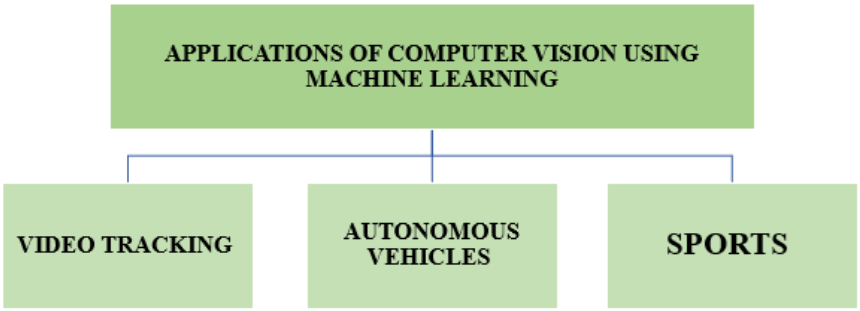

Fig 4: Machine Learning-Based Computer Vision Applications

- Video tracking
- Autonomous vehicles
- Sports

Basketball analytics is achieved by obtaining the data through computer vision. By monitoring the players' movements, video tracking and object recognition are used to collect these analytics. Motion tracking is also aided by motion analysis techniques. Convolutional neural networks are employed in deep learning for data analysis.

5. Conclusion

The headways in man-made brainpower and AI have fundamentally upgraded computer vision applications. Through this paper, it tends to be presumed that CNN has turned into an extremely incredible asset in AI. By giving different pictures as info information at the AI stage can work with the growing experience quicker, and the information can be conveyed for numerous result capabilities, which is a significant benefit of CNN. Aside from the application, the creator referenced in the prior area that CNN is presently likewise being considered for IoT, Business, and homegrown security frameworks. In this way, CNN has acquired an extremely conspicuous spot in Information Designing nevertheless is acquiring. As innovation keeps on developing, the cooperative energy among man-made intelligence and Computer vision guarantees much more extraordinary applications across different spaces, driving advancement and development in the computerized time.

References

[1] Brownlee, Jason. “What Is Deep Learning?” Machine Learning Mastery, 31 Oct. 2019,

[2] Debats, S. R. (2017). Mapping Sub-Saharan African Agriculture in High-Resolution Satellite Imagery with Computer Vision & Machine Learning (Doctoral dissertation, Princeton University).

[3] Dhivyaprabha, T. T., Subashini, P., & Krishnaveni, M. (2016, December). Computational intelligence-based machine learning methods for rule-based reasoning in computer vision applications. In 2016 IEEE Symposium Series on Computational Intelligence (SSCI) (pp. 1-8). IEEE.

[4] Esteva, A., Chou, K., Yeung, S., Naik, N., Madani, A., Mottaghi, A., ... & Socher, R. (2021). Deep learning-enabled medical computer vision. NPJ digital medicine, 4(1), 5.

[5] Hara, S., Kobayashi, S., & Abe, M. (2016). Sound collection systems using a crowdsourcing approach to construct sound map based on subjective evaluation. In 2016 IEEE International Conference on Multimedia & Expo Workshops (ICMEW). IEEE.

[6] Khan, S. A Guide to Convolutional Neural Networks for Computer Vision. Morgan & Claypool, 2018.

[7] Liu, B., Yu, L., Che, C., Lin, Q., Hu, H., & Zhao, X. (2023). Integration and Performance Analysis of Artificial Intelligence and Computer Vision Based on Deep Learning Algorithms. arXiv preprint arXiv:2312.12872

[8] Mahadevkar, S. V., Khemani, B., Patil, S., Kotecha, K., Vora, D. R., Abraham, A., & Gabralla, L. A. (2022). A review on machine learning styles in computer vision—Techniques and future directions. Ieee Access, 10, 107293-107329.

[9] Mubin, N. A., Nadarajoo, E., Mohd Shafri, H. Z., & Hamedianfar, A. (2019). Young and mature oil palm tree detection and counting using convolutional neural network deep learning method. International Journal of Remote Sensing, 40(14).

[10] Párraga Álava, J. A. (2015). Computer Vision and Medical Image Processing: A brief survey of application areas. In Argentine Symposium on Artificial Intelligence (ASAI 2015)-JAIIO 44 (Rosario, 2015).

[11] Pulkit Sharma, Analytics Vidhya, An Introductory Guide to Deep Learning and Neural Networks, 22 Oct. 2018,

[12] Ujjwalkarn. “An Intuitive Explanation of Convolutional Neural Networks.” The Data Science Blog, 29 May 2017,

[13] Upadhyay, Yash. “Computer Vision: A Study on Different CNN Architectures and Their Applications.” Medium, AlumnAI Academy, 29 Mar. 2019,

[14] Upadhyay, Yash. "Computer Vision: A Study On Different CNN Architectures and Their Applications." Medium, AlumnAI Academy, 29 Mar. 2019,

[15] Verma, Shiva. "Understanding 1D and 3D Convolution Neural Network: Keras." Medium, Towards Data Science, 1 Oct. 2019, towardsdatascience.com/understanding-1d-and-3d-convolutionneural-network-keras-

[16] Momin, U. (2023). NREGA-Catalyst for Fostering Inclusive Growth. International Journal for Multidimensional Research Perspectives, 1(4), 63-72.

[17] Momin, M. U. An Analysis of the Challenges and Opportunities Encountered by Small and Medium Enterprises (SMES) in the Context of the Indian Economy.

[18] Momin, U., Mehak, S. T., & Kumar, M. D. (2023). Strategic Planning and Risk Management in the Stratup, Innovation and Entrepreneurship: Best Practices and Challenges. Journal of Informatics Education and Research, 3(2).

[19] Mahajan, T., Momin, U., Khan, S., & Khan, H. ROLE OF WOMEN'S ENTREPRENEURSHIP IN SOCIAL AND ECONOMIC DEVELOPMENT OF INDIA.

[20] Naeem, A. B., Senapati, B., Islam Sudman, M. S., Bashir, K., & Ahmed, A. E. (2023). Intelligent road management system for autonomous, non-autonomous, and VIP vehicles. World Electric Vehicle Journal, 14(9), 238.

[21] Naeem, A. B., Senapati, B., Mahadin, G. A., Ghulaxe, V., Almeida, F., Sudman, S. I., & Ghafoor, M. I. (2024). Determine the Prevalence of Hepatitis B and C During Pregnancy by Using Machine Learning Algorithm. International Journal of Intelligent Systems and Applications in Engineering, 12(13s), 744-751.

[22] Yadav, S., Sudman, M. S. I., Dubey, P. K., Srinivas, R. V., Srisainath, R., & Devi, V. C. (2023, October). Development of an GA-RBF based Model for Penetration of Electric Vehicles and its Projections. In 2023 International Conference on Self Sustainable Artificial Intelligence Systems (ICSSAS) (pp. 1-6). IEEE.

[23] Thingom, C., Tammina, M. R., Joshi, A., Agal, S., Sudman, M. S. I., & Byeon, H. (2023, August). Revolutionizing Data Capitalization: Harnessing Blockchain for IoT-Enabled Smart Contracts. In 2023 Second International Conference On Smart Technologies For Smart Nation (SmartTechCon) (pp. 490-496). IEEE.

[24] Sakthivel, M., Sudman, M. S. I., Ravishankar, K., Avinash, B., Kumar, A., & Ponnusamy, M. (2023, October). Medical Image Analysis of Multiple Myeloma Diagnosis Using CNN and KNN Based Approach. In 2023 International Conference on Self Sustainable Artificial Intelligence Systems (ICSSAS) (pp. 92-97). IEEE.

[25] Menaga, D., & Revathi, S. (2018). Least lion optimisation algorithm (LLOA) based secret key generation for privacy preserving association rule hiding. IET Information Security, 12(4), 332-340.

[26] Menaga, D., & Saravanan, S. (2022). GA-PPARM: constraint-based objective function and genetic algorithm for privacy preserved association rule mining. Evolutionary Intelligence, 15(2), 1487-1498.

[27] Menaga, D., & Revathi, S. (2020). Deep learning: a recent computing platform for multimedia information retrieval. In Deep learning techniques and optimization strategies in big data analytics (pp. 124-141). IGI Global.

[28] Probabilistic principal component analysis (PPCA) based dimensionality reduction and deep learning for cancer classification D Menaga, S Revathi Intelligent Computing and Applications: Proceedings of ICICA 2019, 353-368

[29] Menaga, D., & Revathi, S. (2021). Fractional-atom search algorithm-based deep recurrent neural network for cancer classification. Journal of Ambient Intelligence and Humanized Computing, 1-11.

[30] Menaga, D., & Revathi, D. S. (2018). Privacy preserving using bio inspired algorithms for data sanitization. In International Conference on Electrical, Electronics, Computers, Communication, Mechanical and Computing (EECCMC) (pp. 201-206).

[31] Menaga, D., & Saravanan, S. (2021). Application of artificial intelligence in the perspective of data mining. In Artificial Intelligence in Data Mining (pp. 133-154). Academic Press.

[32] Menaga, D., & Revathi, S. (2020). An empirical study of cancer classification techniques based on the neural networks. Biomedical Engineering: Applications, Basis and Communications, 32(02), 2050013.

[33] Menaga, D., & Begum, I. H. (2020). Bio-inspired algorithms for preserving the privacy of data. Journal of Computational and Theoretical Nanoscience, 17(11), 4971-4979.

[34] Menaga, D., Ambati, L. S., & Bojja, G. R. (2023). Optimal trained long short-term memory for opinion mining: a hybrid semantic knowledgebase approach. International Journal of Intelligent Robotics and Applications, 7(1), 119-133.

[35] Mohammed, A. H. (2021). Fish schooling and sorensen trust based wireless sensor network optimization. International Journal, 9, 6.

[36] Mohammed, A. H. DDoS Malicious Node Detection by Jaccard and Page Rank Algorithm in Cloud Environment.

[37] Mohammed, A. H. (2021). Invasive Weed Optimization Based Ransom-Ware Detection in Cloud Environment.

[38] Faisal, L., Rama, V. S. B., Roy, S., & Nath, S. (2022). Modelling of electric vehicle using modified sepic converter configuration to enhance dc–dc converter performance using matlab. In Smart Energy and Advancement in Power Technologies: Select Proceedings of ICSEAPT 2021, Volume 2 (pp. 643-653). Singapore: Springer Nature Singapore.

[39] Faisal, L., Rama, V. S. B., Yang, J. M., Wajid, A., & Ghorui, S. K. (2022, May). Performance and simulation analysis of ipmsyncrm (internal permanent magnet synchronous reluctance motor) for advanced electric vehicle design. In 2022 3rd International Conference for Emerging Technology (INCET) (pp. 1-6). IEEE.

[40] Mohd, R., & Faisal, L. (2022). Smart Agricultural Practices using Machine Learning techniques For Rainfall Prediction: A case Study of Valkenburg station, Netherlands. Mathematical Statistician and Engineering Applications, 71(4), 8451-8462.

[41] Wani, A. A., & Faisal, L. (2022). Design & development of novel hybrid set of rules for detection and type of malignant or non-malignant tumor in human brain based on svm using artificial intelligence classifier. Mathematical Statistician and Engineering Applications, 71(4), 10253-10276.

[42] Choudhuri, S. S., Bowers, W., & Siddiqui, M. N. (2023). U.S. Patent No. 11,763,241. Washington, DC: U.S. Patent and Trademark Office.

[43] Zanzaney, A. U., Hegde, R., Jain, L., Choudhuri, S. S., & Sharma, C. K. (2023, September). Crop Disease Detection Using Deep Neural Networks. In 2023 International Conference on Network, Multimedia and Information Technology (NMITCON) (pp. 1-5). IEEE.

[44] Jana, S., Ghosh, A., & Guha, B. (2021). IPL 2019: Evaluating the performance of teams by DEA & SEM. Malaya Journal of Matematik Vol. S, 1, 41-45.

[45] Jana, S., Ghosh, A., & Guha, B. (2021). IPL 2019: Evaluating the performance of teams by DEA & SEM. Malaya Journal of Matematik Vol. S, 1, 41-45.

[46] Ghosh, A., Dey, M., Guha, B., Jana, S., & Sarkar, A. (2021). Performance evaluation & rankings of players in IPL 2019 by DEA & SEM. Malaya Journal of Matematik, Vol. S, 1, 46-56.

[47] Nandi, B., Jana, S., & Das, K. P. (2023). Machine learning-based approaches for financial market prediction: A comprehensive review. Journal of AppliedMath, 1(2).

[48] Baid, Y., Ghosh, A., Jana, S., & Giri, A. Evaluation of the conspicuous EPL matches for sponsorships using data envelopment analysis.

[49] Jana, S., Sharma, E. S., Khan, A., Maji, A. K., & Pal, R. K. (2022, December). Generating a Suitable Hash Function Using Sudoku for Blockchain Network. In International Conference on Frontiers in Computing and Systems (pp. 161-171). Singapore: Springer Nature Singapore.

[50] Ghosh, A., Dey, M., Guha, B., Jana, S., & Sarkar, A. (2021). Performance evaluation & rankings of players in IPL 2019 by DEA & SEM. Malaya Journal of Matematik, Vol. S, 1, 46-56.

[51] Subrata, J., Ghosh, A., Ghorui, N., & Serdeira Azevedo, P. Ranking of Financial Apps Using Fuzzy Ahp and Fuzzy Marcos: An Application of Multi-Criteria Decision-Making (Mcdm) Techniques.

[52] Swain, S., Gupta, R. K., Ratnayake, K., Priyanka, P. D., Singh, R., Jana, S., ... & Giri, L. (2018). Confocal imaging and k-means clustering of GABAB and mGluR mediated modulation of Ca2+ spiking in hippocampal neurons. ACS chemical neuroscience, 9(12), 3094-3107.

[53] Jana, S., & Sarkar, A. ROLE OF CAPTAIN'S NATIONALITY IN TEAM'S SUCCESS: A CASE OF INDIAN PREMIER LEAGUE.

[54] Faisal, L., Rama, V. S. B., Roy, S., & Nath, S. (2022). Modelling of Electric Vehicle Using Modified SEPIC Converter Configuration to Enhance DC–DC Converter Performance Using MATLAB. In Smart Energy and Advancement in Power Technologies: Select Proceedings of ICSEAPT 2021, Volume 2 (pp. 643-653). Singapore: Springer Nature Singapore.

[55] Faisal, L., Rama, V. S. B., Yang, J. M., Wajid, A., & Ghorui, S. K. (2022, May). Performance and Simulation Analysis of IPMSyncRM (Internal Permanent Magnet Synchronous Reluctance Motor) for Advanced Electric Vehicle Design. In 2022 3rd International Conference for Emerging Technology (INCET) (pp. 1-6). IEEE.

[56] Wani, A. A., & Faisal, L. (2022). Design & Development of Novel Hybrid Set of Rules for Detection and type of Malignant or Non-Malignant Tumor in Human Brain based on SVM Using Artificial Intelligence Classifier. Mathematical Statistician and Engineering Applications, 71(4), 10253-10276.

[57] Mohd, R., & Faisal, L. (2022). Smart Agricultural Practices using Machine Learning techniques For Rainfall Prediction: A case Study of Valkenburg station, Netherlands. Mathematical Statistician and Engineering Applications, 71(4), 8451-8462.

[58] Purohit, S. (2023). California Geographical Society, 96162, California, United States. Journal of

Environmental Science and Public Health, 7, 176-184.

[59] Purohit, S. Role of Industrialization and Urbanization in Regional Sustainable Development–Reflections from Tier-II Cities in India.

[60] Purohit, M. S. (2012). Resource management in the desert ecosystem of Nagaur district_ An ecological study of land _agriculture_ water and human resources (Doctoral dissertation, Maharaja Ganga Singh University).

[61] Mohammed, A. H. (2021). Fish Schooling And Sorensen Trust Based Wireless Sensor Network Optimization. International Journal, 9, 6.

[62] Mohammed, A. H. DDoS Malicious Node Detection by Jaccard and Page Rank Algorithm in Cloud Environment.

[63] Mohammed, A. H. (2021). Invasive Weed Optimization Based Ransom-Ware Detection in Cloud Environment.