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An Advanced Image Caption Generator Using Deep Neural Networks for Automatic Description Generation and Contextual Understanding

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Abstract: In this research, we use a method for automatically generating image captions to conduct a thorough analysis of deep neural networks. When fed an image, the algorithm can spit out a descriptive text in English. Convolutional neural networks (CNNs), recurrent neural networks (RNNs), and phrase creation are the three parts of the method that we examine. The VGGNet achieves the highest BLEU score after substituting three cutting-edge architectures for the CNN component. As an additional recurrent layer, we suggest a MATLAB and C++ implementation of the Gated Recurrent Units (GRU), which is a simplified version of the original. Long short-term memory (LSTM) and the simplified GRU both produce similar outcomes. On the other hand, it can speed up training and conserve memory with a few tweaks. Lastly, we use Beam Search to produce a number of sentences. Based on the results of the experiments, the modified method is able to produce captions that are on par with state-of-the-art methods while using less training memory. However, it still encounters problems with managing inventory and logistics, which makes it difficult to guarantee efficient shipping and delivery processes or to prevent digital content piracy and copyright infringement.

Keywords: Convolutional neural network; Recurrent neural network (RNN); Gated Recurrent Units (GRU); Long short-term memory; Natural languages processing; Neural Image Caption (NIC).

Introduction

Automatically describing the content of images using natural language is both a fundamental and challenging task in the field of computer vision. This task holds tremendous potential for a variety of applications. For example, it can significantly assist visually impaired individuals by providing them with a better understanding of image content on the web [18-22]. Additionally, it can offer more accurate and compact descriptions of images or videos in contexts such as social media sharing or video surveillance systems, where concise information is critical. The project described here aims to accomplish this image captioning task through the use of deep learning models. The framework developed for this task incorporates both a Convolutional Neural Network (CNN) and a Recurrent Neural Network (RNN), which together enable the system to generate English sentences based on the input image. The CNN component extracts features from the image, and the RNN component generates a sequence of words to describe the image. This system is trained on pairs of images and captions, allowing it to learn the relationships between visual content and its corresponding descriptions [23-29]. As a result, the model is able to generate image captions that are not only semantically descriptive but also grammatically correct.

Humans typically describe scenes using natural language, which is both concise and rich in meaning. However, machine vision systems operate on images, which are essentially two-dimensional arrays of pixel data. The challenge lies in bridging this gap between the visual data and natural language descriptions [30-35]. Vinyals et al. addressed this issue by framing the image captioning task as a language translation problem in their Neural Image Captioning (NIC) model. Their approach involves mapping both images and captions into a shared feature space and learning a translation from image data to natural language sentences. Expanding on this, Donahue et al. proposed a more general method called Long-term Recurrent Convolutional Networks (LRCN), which combines the strengths of CNNs and RNNs to handle the "one-to-many" relationship between an image and its corresponding sequence of words. The LRCN approach improves upon earlier models by incorporating the temporal aspects of language generation, making it more suitable for tasks where generating a coherent sequence of words is required [36-41].

In the image captioning process involves several key steps: feature extraction using CNNs, sequence generation with RNNs, and training the system on large datasets of images and captions. By learning from these datasets, the system can generate descriptive captions that provide a meaningful and grammatically correct interpretation of the visual content, contributing to a wide range of applications, from aiding visually impaired users to enhancing user experiences on social media and in surveillance systems [42-47]. The Image Caption Generator System is designed to offer users an engaging and seamless experience by automatically generating meaningful captions for images. The primary outcome of this project is that the system will provide users with real-time caption generation that complements the content and enhances their positive state [48-51]. Upon uploading an image, the system should be able to process it swiftly and generate captions that are contextually relevant, grammatically correct, and reflective of the image’s content. The system aims to offer not only functional but also enjoyable interactions, enhancing user satisfaction with both the technology and the experience [52-57].

Another expected outcome is that the caption generation will be real-time, offering instantaneous feedback as users interact with the system. As the system processes the images, it will generate descriptions quickly, ensuring that there is no significant delay between user input and the generated output. This will improve user engagement and provide an immediate response to their visual content, making the system more interactive and intuitive [58-63].

Several challenges are inherent in the development of this project, particularly around real-time processing and accuracy. First, the system needs to handle the real-time processing of images, which requires efficient image analysis and caption generation algorithms. Real-time processing can be resource-intensive, as it involves the extraction of features from images and their transformation into meaningful natural language descriptions. Another challenge lies in enhancing the accuracy of the detection algorithms. The system must accurately identify key features in images to generate contextually appropriate captions [64-71]. Variations in image quality, lighting, angles, or even image complexity may hinder the accuracy of the generated captions. Thus, developing robust algorithms capable of handling these challenges while maintaining high accuracy will be crucial. Furthermore, the integration of machine learning models with real-time image processing presents its own set of difficulties. Training deep learning models on large image datasets to understand semantic and grammatical nuances of natural language and mapping them to images involves complex computational resources. Ensuring the system remains efficient and accurate without overwhelming computational constraints will be essential [72-76].

The domain of this project intersects several areas, including machine learning, data management, and user interface development, making it an interdisciplinary venture. The primary goal is to create an Image Caption Generator that is highly accurate, user-friendly, and capable of providing meaningful captions for a wide variety of images. The project will leverage SQL (Structured Query Language) for efficient management and retrieval of large datasets. SQL will be used to store user profiles, image metadata, and search histories, facilitating the smooth operation of the system. By using a relational database system, the platform can maintain and manage user data while ensuring security, scalability, and consistency across various application instances. One of the most critical components of the project is the algorithm responsible for generating captions [77-83]. The system will integrate various algorithms, such as content-based filtering and hybrid models, to process and generate accurate captions. These algorithms will analyze both the visual content of the image (through deep learning models like CNNs) and context from previously observed images and captions (through RNNs or other language models). The goal is to produce captions that are semantically rich and reflect the context and content of the image [84].

To ensure accessibility and user-friendliness, a web or mobile application interface will be designed. The interface will allow users to easily upload images and receive generated captions in real-time. Web or mobile app frameworks such as Python-based Flask/Django for web apps, or JavaScript (React or Angular) for frontend development, can be employed for seamless user interaction. On mobile platforms, Java or Kotlin can be used for Android development or Swift for iOS applications, making the system available to a broad audience [85-93]. The project will integrate with internet streaming APIs to enable dynamic image processing and caption generation. For instance, it may employ APIs from image libraries such as Unsplash or Pixabay, where images are fetched in real-time and captions are generated on the fly. Additionally, the system will be deployed on cloud platforms, making it scalable and accessible from anywhere [94-103]. Tools such as Docker can be used to containerize the application, ensuring that the environment remains consistent across various stages of deployment. Furthermore, deployment to platforms such as AWS, Google Cloud, or Azure can ensure that the system performs reliably at scale [104-111].

Looking ahead, the project could be expanded into areas such as integrating emotion recognition from images for more personalized captioning or extending it to video captioning. Emotion-aware captioning could allow the system to provide more tailored captions that consider the perceived emotional content of the image. With advancements in AI, there is also potential to generate multimodal descriptions—combining visual content with audio, textual, or even contextual data from social media [112-122]. Moreover, using reinforcement learning techniques could allow the system to "learn" from user feedback, enabling continuous improvement in caption quality based on user interactions. The development of the Image Caption Generator System promises to be a significant step forward in automatic image understanding and captioning. It blends various domains such as machine learning, data management, and user experience design to create a robust system for automatic image description generation [123-131]. Through overcoming challenges like real-time processing and algorithm accuracy, this project could have far-reaching applications in fields such as accessibility, entertainment, social media, and surveillance. As the system evolves, it has the potential to be a powerful tool for enriching user interactions with digital images.

Literature Review

The methodology incorporated Android, DBMS, and filtering systems, alongside powerful frameworks such as Keras and TensorFlow. This model effectively maps visual input to textual descriptions, providing high-quality captions for images [1]. However, while the model was pioneering, it faces challenges related to real-time performance optimization when dealing with large-scale datasets. Although it can generate captions with impressive accuracy, it struggles with efficiency when deployed in environments where latency and resource constraints are critical. In scenarios like real-time image processing for mobile applications or large-scale databases, the speed and memory usage of the model need enhancement [2]. Furthermore, the architecture may not be as adaptable to the evolving complexities of visual content in social media, video surveillance, or interactive systems. The main technical gap lies in its scalability and real-time application capabilities, requiring further advancements to handle dynamic, ever-changing image inputs efficiently without compromising accuracy [3].

The approach of neural image caption generation with visual attention revolutionized the way images are described by machines. The introduction of an attention mechanism allowed the system to focus on specific parts of an image when generating captions, significantly improving the relevance and quality of the descriptions [4]. The methodology leveraged front-end technologies and website pages to create an interactive user experience. The attention mechanism ensures that the generated captions align more accurately with the most important elements in the image, making the system more intelligent and human-like [5[. However, while the attention-based model excels in terms of caption quality, it still has limitations in computational efficiency, especially in real-time applications. The model struggles to deliver captions quickly enough for real-time video or interactive systems where rapid processing is essential. This gap becomes evident when dealing with larger, high-resolution images or when processing videos, as the computation required for attention mechanisms can be intensive [6]. The key technical challenge lies in optimizing the model to work effectively in time-sensitive applications without sacrificing the accuracy of the captions [7].

The methodology, which integrates SDKs, Android, AI, and OS, enables the system to consider both global and local features of the image, leading to more detailed and contextually accurate captions [8]. This dual mechanism allows the model to prioritize key visual elements while still understanding the broader context, making it effective for complex scenes and question-answering tasks. However, the model faces challenges in addressing diverse and complex image contexts with low computational overhead [9]. The current implementation may struggle when scaling to larger datasets or when operating on devices with limited computational resources, such as mobile phones. While the combined attention approach improves caption accuracy, the technical gap lies in making this system more efficient without losing the richness of the captions [10]. Further improvements are needed to ensure that it can work seamlessly in real-time, across various platforms, and with large, varied image datasets.

The Image Transformer explored the use of transformer-based architectures for image captioning, taking advantage of the model's ability to handle sequential data and its self-attention mechanism [11]. This innovative approach addresses the challenge of generating coherent, contextually relevant captions by leveraging the transformer's strength in processing complex relationships between different image features. The methodology incorporated DBMS and AI/ML techniques to process and generate captions based on images, showing potential in creating more accurate and semantically rich descriptions [12]. However, despite the promising results, the Image Transformer faces technical challenges in scalability and real-time applications. While transformer models excel in accuracy, they often require considerable computational power, making them less suitable for use in real-time environments or on devices with limited resources [13]. The high computational requirements of training and inference are a significant limitation, especially when processing large-scale image datasets or when the model is deployed in environments with stringent performance constraints. The key technical gap lies in optimizing the transformer model for efficiency and scalability, ensuring that it can handle large volumes of data without compromising on real-time responsiveness [14].

The methodology used in this model is based on the Cordova framework, utilizing HTML, CSS, and JavaScript for its frontend development. VisualBERT combines the strengths of Vision Transformers (ViT) and BERT (Bidirectional Encoder Representations from Transformers), which is widely known for natural language processing tasks. The model processes both visual and textual data simultaneously, making it ideal for applications that require a deep understanding of both images and text [15]. By jointly embedding image features and textual descriptions, VisualBERT allows for more efficient image captioning, visual question answering, and other vision-language tasks. Its performance and simplicity offer a strong baseline for further advancements in the field [16]. However, despite its effectiveness, VisualBERT still faces challenges in scalability when applied to more complex, real-world scenarios, such as large datasets with high variability in image content and textual context. The technical gap in this paper lies in optimizing the model for even greater efficiency and flexibility across various domains of vision and language tasks [17].

Project Overview

The goal of the image caption generator project is to create a system capable of automatically describing the content of images in natural language. This system will analyze the visual elements in an image and generate a descriptive caption, which could range from simple object identification to more complex scene interpretation. The primary purpose of this project is to assist visually impaired users by providing textual descriptions of visual content, as well as to enhance content retrieval and classification in various applications such as social media, e-commerce, and security systems. The image caption generator will be deployed across multiple platforms, including web applications and mobile apps, to ensure accessibility and usability. The project also aims to explore the application of assistive technologies for broader audiences, facilitating a seamless interaction with visual media without requiring extensive user input. This will provide a valuable tool for both individuals with disabilities and organizations seeking to optimize visual content management [132-136].

The core functionality of the image caption generator is its ability to process an input image, interpret its content, and generate a caption in natural language that accurately describes the objects, people, or scenes present. The system will use deep learning techniques, such as Convolutional Neural Networks (CNNs) for image feature extraction and Recurrent Neural Networks (RNNs) for generating coherent and grammatically correct captions. Additional features of the system will include support for multiple languages, allowing it to generate captions in various languages based on user preferences. The system will also include a real-time processing capability, providing captions almost instantaneously upon image input. Moreover, the generator will support image retrieval, enabling users to input a description or keywords and retrieve relevant images from a database. This makes the system flexible and applicable in a variety of scenarios, such as improving image search functionality and enhancing social media content management.

To develop the image caption generator, several key technologies and tools will be required. The backbone of the image analysis will be deep learning models, particularly CNNs for visual feature extraction and RNNs or Transformer-based models for generating natural language text. For training the models, frameworks such as TensorFlow or PyTorch will be used, as they offer a wide range of pre-trained models and flexible architectures for image captioning tasks. Additionally, a programming language such as Python will be used to implement the core algorithms, leveraging libraries like Keras for deep learning model building and OpenCV for image processing tasks. The system will also need a solid hardware infrastructure, especially GPUs, to train deep learning models efficiently. For deployment, the image caption generator could be packaged into web or mobile applications, utilizing front-end technologies such as React for web apps or native development tools for mobile platforms (e.g., Swift for iOS and Kotlin for Android). This technical stack ensures that the system is scalable, efficient, and can handle large datasets.

Collecting a suitable dataset for training the image caption generator is critical for its success. A comprehensive dataset containing a wide variety of images paired with accurate captions will be needed. Common datasets for image captioning tasks include MS COCO, which contains thousands of images with multiple descriptive captions for each. The dataset will be curated to ensure that it covers diverse scenarios, objects, and environments, enabling the model to generate versatile captions. Once the dataset is obtained, preprocessing steps will be applied to both the images and captions. For images, standard preprocessing steps such as resizing, normalization, and augmentation (flipping, cropping, and rotating) will be performed to ensure consistency and improve model generalization. For the captions, text tokenization will be done, converting each sentence into a series of words or tokens that can be fed into the deep learning model. Additionally, stop words will be removed, and text may be lowercased to ensure uniformity. These preprocessing steps will prepare the data for effective training, ensuring that the model can learn to generate accurate and relevant captions from diverse visual inputs.

Result and Discussion

As of my last knowledge update in January 2022, several systems and frameworks have been developed to address the challenge of image caption generation, using a combination of computer vision and natural language processing techniques. These systems leverage deep learning models and advanced AI technologies to generate captions that describe the content of images in human-readable text. Some of the notable existing systems and frameworks for image caption generation include Microsoft Cognitive Services, Google Cloud Vision AI, and IBM Watson Visual Recognition. Microsoft Cognitive Services, formerly known as Project Oxford, provides an image captioning API that uses deep learning models to generate captions for images. This service is available for developers to integrate into their applications, making it easier to add image captioning functionality to a wide range of software solutions. Google Cloud Vision AI offers a comprehensive image analysis service that includes capabilities for generating image captions. By using Google's machine learning technologies, it can understand and describe the content of images, offering another powerful tool for developers looking to implement image captioning. IBM Watson Visual Recognition, part of IBM's suite of AI services, also includes image recognition and caption generation features. It is particularly useful for applications like content tagging and enhancing accessibility by providing descriptive captions for visual content.

Despite the advancements in image captioning technology, there are several challenges and limitations in the existing systems. One of the key challenges is ensuring the accuracy and relevance of the captions generated. While systems like Microsoft Cognitive Services, Google Cloud Vision AI, and IBM Watson Visual Recognition can generate captions that describe the content of an image, the quality of these captions can sometimes vary. Captions may not always capture the nuanced or contextual elements of an image, leading to inaccuracies or overly simplistic descriptions. Additionally, these systems often struggle with handling complex scenes or images with multiple interacting objects. Another issue with existing systems is their reliance on predefined models that may not be fully customizable for specific use cases. For example, a system trained on generic image datasets may not perform as well in specialized domains like medical imaging, historical archives, or product photography, where more specific context and detail are required. This limitation calls for more specialized models that can adapt to domain-specific requirements.

To evaluate the effectiveness of image caption generation systems, various evaluation metrics are used to compare the quality of machine-generated captions with human-generated ones. One common metric is BLEU (Bilingual Evaluation Understudy), which measures the similarity between the captions produced by the system and reference captions generated by humans. BLEU is a popular metric used in machine translation tasks and provides a score based on the co-occurrence of n-grams (sequences of words) between the candidate and reference captions. The BLEU score is calculated for unigrams (B-1), bigrams (B-2), trigrams (B-3), and higher-order n-grams (B-4).The unigram BLEU score (B-1) measures the adequacy of the generated caption in terms of the individual words it contains. Higher-order n-gr am scores like B-2, B-3, and B-4 reflect the system's ability to generate more complex, semantically rich captions that match human expectations in terms of grammar and contextual meaning. BLEU has been widely adopted for evaluating machine-generated captions, but it also has limitations. For example, it may fail to capture the semantic meaning of the generated caption if the words in the n-grams are not in the same order but still convey the same information. Therefore, BLEU should be used in combination with other evaluation metrics like METEOR, CIDEr, and ROUGE to get a more comprehensive understanding of caption quality.

Additionally, while BLEU and other evaluation metrics help in quantifying the performance of image captioning systems, they do not always align perfectly with human judgment. This is because human-generated captions can vary greatly in terms of phrasing, word choice, and level of detail. As a result, evaluating the quality of captions generated by AI systems often requires human evaluation, in which annotators rate the relevance, clarity, and correctness of the captions. This manual evaluation provides a more nuanced understanding of the system's ability to generate useful, accurate, and descriptive captions. While existing systems like Microsoft Cognitive Services, Google Cloud Vision AI, and IBM Watson Visual Recognition offer valuable image captioning capabilities, there are still significant challenges in ensuring the accuracy, contextual relevance, and customization of the captions. Furthermore, evaluating the performance of these systems requires comprehensive metrics and human evaluation to assess the true quality of the generated captions. With continuous advancements in deep learning and computer vision, future systems may overcome these challenges by incorporating more sophisticated models and evaluation techniques.

Conclusion and future enhancement

This work proposes a novel deep neural architecture for image caption generation using an encoder-decoder framework, specifically leveraging the VAPN (Visual Attention Pyramid Network) and CSE (Contextual Spatial Embedding) network. The design integrates wavelet decomposition within the convolutional neural network (CNN) to extract spatial, semantic, and spectral information from the input image. The combination of these features, along with atrous convolution, enables the model to identify and focus on the most salient regions in the image, which is crucial for generating more accurate and descriptive captions. To further enhance the caption generation, spatial and channel-wise attention mechanisms are employed in the feature maps outputted by the VAPN. Additionally, the CSE network helps to capture the contextual spatial relationships between objects in the image, ensuring that the generated captions are more contextually relevant and precise. One area for future enhancement is the integration of more advanced attention mechanisms into the model. Attention mechanisms allow the model to focus on specific parts of the image when generating captions, which can significantly improve the relevance and coherence of the output. By attending to different regions of the image, the model can generate captions that are more descriptive and contextually accurate, making the system more useful for real-world applications.

References

1. T. K. Lakshmi and J. Dheeba, "Classification and Segmentation of Periodontal Cyst for Digital Dental Diagnosis Using Deep Learning," Computer Assisted Methods in Engineering and Science, vol. 30, no. 2, pp. 131-149, 2023.
2. H. A. Al-Asadi, M. H. Al-Mansoori, M. Ajiya, S. Hitam, M. I. Saripan, and M. A. Mahdi, “Effects of pump recycling technique on stimulated Brillouin scattering threshold: A theoretical model,” Optics Express, vol. 18, no. 21, pp. 22339- 22347, 2010.
3. V. Yadav, “The Role of Virtual Reality in Patient Education: Exploring how Virtual Reality Technology can be used to Educate Patients about Complex Medical Procedures or Health Conditions,” Progress in Medical Sciences, vol. 8, no. 3, pp. 1–5, May. 2024.
4. O. Krishnamurthy and G. Vemulapalli, "Advancing Sustainable Cybersecurity: Exploring Trends and Overcoming Challenges with Generative AI," in Sustainable Development through Machine Learning, AI and IoT, P. Whig, N. Silva, A. A. Elngar, N. Aneja, and P. Sharma, Eds. Cham, Switzerland: Springer, 2025, vol. 2196, pp. 1-14.

5. G. Vemulapalli, "Self-service analytics implementation strategies for empowering data analysts," International Journal of Machine Learning and Artificial Intelligence, vol. 4, no. 4, pp. 1-14, 2023.
6. R. Rai, A. Shrestha, S. Rai, S. Chaudhary, D. K. Acharya, and S. Subedi, “Conversion of farming systems into organic biointensive farming systems and the transition to sustainability in agro-ecology: Pathways towards sustainable agriculture and food systems,” J. Multidiscip. Sci., vol. 6, no. 1, pp. 26–31, Jun. 2024.
7. S. Rai and R. Rai, “Advancements and practices in budding techniques for kiwifruit propagation,” J. Multidiscip. Sci., vol. 6, no. 1, pp. 26–31, Jun. 2024.
8. S. Rai and R. Rai, “Monkey menace in Nepal: An analysis and proposed solutions,” J. Multidiscip. Sci., vol. 6, no. 1, pp. 26–31, Jun. 2024.
9. S. K. Suvvari, "Managing project scope creep: Strategies for containing changes," Innov. Res. Thoughts, vol. 8, no. 4, pp. 360–371, 2022.
10. V. S. Settibathini, S. K. Kothuru, A. K. Vadlamudi, L. Thammreddi, and S. Rangineni, "Strategic analysis review of data analytics with the help of artificial intelligence," Int. J. Adv. Eng. Res., vol. 26, no. 6, pp. 1–10, 2023.
11. S. Singhal, S. K. Kothuru, V. S. K. Settibathini, and T. R. Bammidi, "ERP excellence: A data governance approach to safeguarding financial transactions," Int. J. Manag. Educ. Sustain. Dev., vol. 7, no. 7, pp. 1–18, 2024.
12. M. A. K. V. Venkata, S. K. Settibathini, S. K. K. Gatala, and D. Sukhwinder, "Navigating the next wave with innovations in distributed ledger frameworks," Int. J. Crit. Infrastructures, in press, 2024.
13. R. K. Batchu and V. S. K. Settibathini, "Sustainable finance beyond banking: Shaping the future of financial technology," in Sustainable Development Through Machine Learning, AI and IoT, P. Whig, N. Silva, A. A. Elngar, N. Aneja, and P. Sharma, Eds., ICSD 2024, Communications in Computer and Information Science, vol. 2196, Springer, Cham, 2025, pp. 1–12.
14. V. S. K. Settibathini, A. Virmani, M. Kuppam, S. Nithya, S. Manikandan, and Elayaraja, "Shedding light on dataset influence for more transparent machine learning," in Explainable AI Applications for Human Behavior Analysis, IGI Global, USA, 2024, pp. 33–48.
15. V. S. K. Settibathini, "Optimizing cash flow management with SAP intelligent robotic process automation (IRPA)," Trans. Latest Trends Artif. Intell., vol. 4, no. 4, pp. 1–21, 2023.
16. V. S. K. Settibathini, "Enhancing user experience in SAP Fiori for finance: A usability and efficiency study," Int. J. Mach. Learn. Sustain. Dev., vol. 5, no. 3, pp. 1–13, 2023.
17. V. S. K. Settibathini, "Data privacy compliance in SAP finance: A GDPR (General Data Protection Regulation) perspective," Int. J. Interdiscip. Finance Insights, vol. 2, no. 2, pp. 1–18, 2023.
18. L. T. R. Thammreddi, S. K. Kothuru, V. S. Kumar, and A. Kumar, "Analysis on data engineering: Solving data preparation tasks with ChatGPT to finish data preparation," J. Emerg. Technol. Innov. Res., vol. 10, no. 12, p. 11, 2023.
19. S. K. Suvvari, "Project portfolio management: Best practices for strategic alignment," Innov. Res. Thoughts, vol. 8, no. 4, pp. 372–385, 2022.
20. S. K. Suvvari, "The impact of agile on customer satisfaction and business value," Innov. Res. Thoughts, vol. 6, no. 5, pp. 199–211, 2020.

21. S. K. Suvvari, "An exploration of agile scaling frameworks: Scaled agile framework (SAFe), large-scale scrum (LeSS), and disciplined agile delivery (DAD)," Int. J. Recent Innov. Trends Comput. Commun., vol. 7, no. 12, pp. 9–17, 2019.
22. S. K. Suvvari, B. Anjum, and M. Hussain, "Key factors impacting the e-learning effectiveness for computer science students: An empirical study," Webology, vol. 17, no. 4, pp. 837–847, 2020.
23. Ali, M. Ahmad, S. Nawaz, T. Raza, and S. K. Suvvari, "An effective structure for data management in the cloud-based tools and techniques," J. Eng. Sci., vol. 15, no. 4, pp. 215–228, 2022.
24. K. Shrestha, S. Chaudhary, S. Subedi, S. Rai, D. K. Acharya, and R. Rai, "Farming systems research in Nepal: Concepts, design, and methodology for enhancing agricultural productivity and sustainability," J. Multidiscip. Sci., vol. 6, no. 1, pp. 17–25, May 2024.
25. S. Rai and R. Rai, "Advancement of kiwifruit cultivation in Nepal: Top working techniques," J. Multidiscip. Sci., vol. 6, no. 1, pp. 11–16, Feb. 2024.
26. S. Chaudhary, A. K. Shrestha, S. Rai, D. K. Acharya, S. Subedi, and R. Rai, "Agroecology integrates science, practice, movement, and future food systems," J. Multidiscip. Sci., vol. 5, no. 2, pp. 39–60, Dec. 2023.
27. R. Rai, V. Y. Nguyen, and J. H. Kim, "Variability analysis and evaluation for major cut flower traits of F1 hybrids in Lilium brownii var. colchesteri," J. Multidiscip. Sci., vol. 4, no. 2, pp. 35–41, Dec. 2022.
28. V. Y. Nguyen, R. Rai, J.-H. Kim, J. Kim, and J.-K. Na, "Ecogeographical variations of the vegetative and floral traits of Lilium amabile Palibian," J. Plant Biotechnol., vol. 48, no. 4, pp. 236–245, Dec. 2021.
29. R. Rai and J. H. Kim, "Performance evaluation and variability analysis for major growth and flowering traits of Lilium longiflorum Thunb. genotypes," J. Exp. Biol. Agric. Sci., vol. 9, no. 4, pp. 439–444, Aug. 2021.
30. R. Rai, V. Y. Nguyen, and J. H. Kim, "Estimation of variability analysis parameters for major growth and flowering traits of Lilium leichtlinii var. maximowiczii germplasm," J. Exp. Biol. Agric. Sci., vol. 9, no. 4, pp. 457–463, Aug. 2021.
31. R. Rai and J. H. Kim, "Effect of storage temperature and cultivars on seed germination of Lilium×formolongi HORT.," J. Exp. Biol. Agric. Sci., vol. 8, no. 5, pp. 621–627, Oct. 2020.
32. R. Rai and J. H. Kim, "Estimation of combining ability and gene action for growth and flowering traits in Lilium longiflorum," Int. J. Adv. Sci. Technol., vol. 29, no. 8S, pp. 1356–1363, 2020.
33. R. Rai, A. Badarch, and J.-H. Kim, "Identification of superior three way-cross F1s, its line×tester hybrids and donors for major quantitative traits in Lilium×formolongi," J. Exp. Biol. Agric. Sci., vol. 8, no. 2, pp. 157–165, Apr. 2020.
34. R. Rai, J. Shrestha, and J. H. Kim, "Line×tester analysis in Lilium×formolongi: Identification of superior parents for growth and flowering traits," SAARC J. Agric., vol. 17, no. 1, pp. 175–187, Aug. 2019.
35. R. Rai, J. Shrestha, and J. H. Kim, "Combining ability and gene action analysis of quantitative traits in Lilium × formolongi," J. Agric. Life Environ. Sci., vol. 30, no. 3, pp. 131–143, Dec. 2018.
36. T. X. Nguyen, S.-I. Lee, R. Rai, N. Kim, and J. H. Kim, "Ribosomal DNA locus variation and REMAP analysis of the diploid and triploid complexes of Lilium lancifolium," Genome, vol. 59, no. 8, pp. 551–564, Aug. 2016.

37. N. X. Truong, J. Y. Kim, R. Rai, J. H. Kim, N. S. Kim, and A. Wakana, “Karyotype analysis of Korean Lilium maximowiczii Regal populations,” J. Fac. Agric. Kyushu Univ., vol. 60, no. 2, pp. 315–322, Sep. 2015.

38. G. Vemulapalli, "Overcoming data literacy barriers: Empowering non-technical teams," International Journal of Holistic Management Perspectives, vol. 5, no. 5, pp. 1-17, 2024.

39. G. Vemulapalli, "Architecting for real-time decision-making: Building scalable event-driven systems," International Journal of Machine Learning and Artificial Intelligence, vol. 4, no. 4, pp. 1-20, 2023.

40. G. Vemulapalli, S. Yalamati, N. R. Palakurti, N. Alam, S. Samayamantri, and P. Whig, "Predicting obesity trends using machine learning from big data analytics approach," 2024 Asia Pacific Conference on Innovation in Technology (APCIT), Mysore, India, 2024, pp. 1-5.

41. G. Vemulapalli, "AI-driven predictive models strategies to reduce customer churn," International Numeric Journal of Machine Learning and Robots, vol. 8, no. 8, pp. 1-13, 2024.

42. G. Vemulapalli, "Cloud data stack scalability: A case study on migrating from legacy systems," International Journal of Sustainable Development Through AI, ML and IoT, vol. 3, no. 1, pp. 1-15, 2024.

43. G. Vemulapalli, "Operationalizing machine learning best practices for scalable production deployments," International Machine Learning Journal and Computer Engineering, vol. 6, no. 6, pp. 1-21, 2023.

44. G. Vemulapalli, "Optimizing NoSQL database performance: Elevating API responsiveness in high-throughput environments," International Machine Learning Journal and Computer Engineering, vol. 6, no. 6, pp. 1-14, 2023.

45. G. Vemulapalli, "Optimizing analytics: Integrating data warehouses and lakes for accelerated workflows," International Scientific Journal for Research, vol. 5, no. 5, pp. 1-27, 2023.

46. V. Yadav, “Blockchain for Secure Healthcare Data Exchange: Exploring the Potential of Blockchain Technology to Create a Secure and Efficient Data Exchange System for Healthcare Information”, Journal of Scientific and Engineering Research, vol. 11, no. 4, pp. 344–350, Apr. 2024.

47. V. Yadav, “Predictive Analytics for Preventive Medicine: Analyzing how Predictive Analytics is Utilized for Forecasting Patient Health Trends and Preventive Disease,” Progress in Medical Sciences, vol. 8, no. 4, pp. 1–6, Jul. 2024.

48. Vivek Yadav, “Cybersecurity Protocols for Telehealth: Developing new cybersecurity protocols to protect patient data during telehealth sessions”, N. American. J. of Engg. Research, vol. 5, no. 2, May 2024, Accessed: Oct. 27, 2024.

49. V.Yadav, “Ethical Implications of Al in Patient Care Decisions: A Study on the Ethical Considerations of Using Artificial Intelligence to Make or Assist in Patient Care Decisions,” Journal of Artificial Intelligence & Cloud Computing, vol. 3, no. 3, pp. 1–5, Jun. 2024.

50. V. Yadav, “Use of Augmented Reality for Surgical Training: Studying the effectiveness and potential of augmented reality tools in training surgeons,” Journal of Artificial Intelligence, Machine Learning and Data Science, vol. 1, no. 2, pp. 927–932, Apr. 2024.

51. V. Yadav, “Wearable Health Technology Data Privacy; Investigating the Balance between the Benefits of Wearable Health Devices and the Privacy Concerns they Raise,” International Journal of Science and Research (IJSR), vol. 11, no. 12, pp. 1363–1371, Dec. 2022.

52. V. Yadav, “Economic Impact of Telehealth Expansion: Analyse the Cost - Effectiveness and Long - Term Economic Implications of The Widespread Adoption of Telehealth Services Post Pandemic,” International Journal of Science and Research (IJSR), vol. 12, no. 6, pp. 2997–3001, Jun. 2023.
53. V. Yadav, “Healthcare Workforce Economics: Study the Economic Effects of the Changing Demographics of Healthcare Workers, Including the Rise of Gig Economy Roles in Healthcare,” Progress In Medical Sciences, pp. 1–5, Sep. 2022.
54. Vivek Yadav, “Value-Based Care and Economic Outcomes: Investigate the Correlation Between Value-Based Care Models and Economic Outcomes for Healthcare Providers and Patients”, Journal of Scientific and Engineering Research, vol. 10, no. 3, pp. 132–141, Mar. 2023.
55. V. Yadav, “Healthcare IT Innovations and Cost Savings: Explore How Recent Innovations in Healthcare IT Have led to Cost Savings and Economic Benefits within the Healthcare System,” International Journal of Science and Research (IJSR), vol. 8, no. 12, pp. 2070–2076, Dec. 2019.
56. V. Yadav, “Impact Of Biotechnology Advances On Healthcare Costs: Analyze The Economic Impact Of Biotechnology Advances, Such As Gene Editing And Personalized Medicine On Healthcare Costs,” International Journal of Core Engineering & Management, no. 6, 2019, Accessed: Oct. 28, 2024.
57. V. Yadav, “Economic Consequences Of Healthcare Data Breaches: Explore The Direct And Indirect Economic Consequences Of Data Breaches In Healthcare Organizations,” International Journal of Core Engineering & Management, no. 6, 2020, Accessed: Oct. 28, 2024.
58. V. Yadav, “AI-Driven Predictive Models for Healthcare Supply Chains: Developing AI Models to Predict and Optimize Healthcare Supply Chains, especially during Global Health Emergencies,” Progress in Medical Sciences, vol. 6, no. 1, pp. 1–8, Feb. 2022.
59. Vivek Yadav, “AI and Economics of Mental Health: Analyzing how AI can be used to improve the cost-effectiveness of mental health treatments and interventions”, Journal of Scientific and Engineering Research, vol. 8, no. 7, pp. 274–284, Jul. 2021.
60. Vivek Yadav, “AI-assisted Remote Patient Monitoring for Rural Areas: Exploring the Use of AI in Enhancing Remote Patient Monitoring Systems to Improve Healthcare Access in Rural Communities”, Journal of Scientific and Engineering Research, vol. 8, no. 12, pp. 300–310, Dec. 2021.
61. V. Yadav, “AI for Predicting Disease Outbreaks: Developing AI systems capable of predicting disease outbreaks by analyzing global health data and trends,” Journal of Artificial Intelligence, Machine Learning and Data Science, vol. 1, no. 1, pp. 946–953, Jan. 2023.
62. V. Yadav, “AI and Patient Data Sovereignty: Researching the Implications of AI on Patient Data Ownership, Control And Consent,” Journal of Artificial Intelligence Machine Learning and Data Science, vol. 1, no. 1, pp. 999–1005, Mar. 2022.
63. V. Yadav, Y., “Regulatory Compliance and Cyber-Security in Healthcare: Investigating the Relationship Between Regulatory Compliance and The Effectiveness of Cyber-Security Measures in Healthcare Organizations,” International Journal of Core Engineering & Management, no. 6, 2020, Accessed: Oct. 28, 2024.
64. V. Yadav, “Cybersecurity in Healthcare IoT Devices: Studying the Vulnerabilities and Defence Mechanisms for IoT devices used in Healthcare Settings,” International Journal of Science and Research, vol. 10, no. 1, pp. 1675–1681, Jan. 2021.

65. B. Albadawi and I. Alzeer, "The virtual museum VM as a tool of learning science from the perspective of learning disabled (LD) children and their parents," presented at the Sharjah International Conference on Education in Post-COVID-19, 2022.

66. B. Albadawi, "Emphasize inclusive education and vocational training for disability in Palestine," Journal of Positive Psychology and Wellbeing, vol. 6, no. 1, pp. 1138-1156, 2022.

67. B. Albadawi, "Introducing, applying, and elaborating the policies of inclusive education in Palestine," Turkish Online Journal of Qualitative Inquiry, vol. 12, no. 9, 2021.

68. B. Albadawi, "The virtual museum VM as a tool of science and technology literacy in informal environment," M.S. thesis, Al-Quds Univ., 2011. [Online]. Available: https://dspace.alquds.edu/handle/20.500.12213/3246.

69. B. I. Albadawi and M. O. Salha, "Comparing leadership models at Al-Quds University according to gender in light of leadership theory with love," Specialusis Ugdymas, vol. 1, no. 43, pp. 1739-1748, 2022.

70. B. I. Albadawi and M. O. Salha, "Role of knowledge management in ensuring quality of higher education in Al-Quds University from the academic staff's perspective," The Arab Journal for Quality Assurance in Higher Education, vol. 14, no. 47, pp. 1-30, 2021.

71. B. I. Albadawi, "Leadership change for the development policy of inclusive education: Leadership theories and models," in Comparative Research on Diversity in Virtual Learning: Eastern vs. Western Perspectives, IGI Global, 2023, pp. 201-214.

72. B. I. Albadawi, "The virtual museum VM as a tool for learning science in informal environment," Education in the Knowledge Society (EKS), vol. 22, 2021. [Online]. Available: https://revistas.usal.es/tres/index.php/eks/article/view/23984/26419.

73. B. I. Albadawi, "Virtual reality in process for children with autism disability," in Comparative Research on Diversity in Virtual Learning: Eastern vs. Western Perspectives, IGI Global, 2023, pp. 88-104.

74. B. I. M. Albadawi, "An analytical study of the Palestinian inclusive education policy and its application in reality: Toward developing a visionary model in light of international criteria and local experiences," Ph.D. dissertation, Arab American Univ. Palestine, 2023.

75. M. O. Salha and B. I. Albadawi, "Organizational culture and knowledge management at Al-Quds University," Journal of Positive School Psychology, vol. 6, no. 3, pp. 7770-7781, 2022.

76. N. Dakhlallah and B. Albadawi, "The Illinois scale for examining psycho-linguistic abilities, learning disabilities, and verification of its validity and persistence in kindergartens in the suburbs of Jerusalem," 2021.

77. H. A. Al-Asadi, M. H. Al-Mansoori, M. I. Saripan, and M. A. Mahdi, “Brillouin Linewidth Characterization in Single Mode Large Effective Area Fiber through the Co-Pumped Technique,” International Journal of Electronics, Computer and Communications Technologies (IJECCT), vol. 1, no. 1, pp. 16-20, 2010.

78. H. A. Al-Asadi, M. H. Al-Mansoori, S. Hitam, M. I. Saripan, and M. A. Mahdi, “Particle swarm optimization on threshold exponential gain of stimulated Brillouin scattering in single mode fibers,” Optics Express, vol. 19, no. 3, pp. 1842-1853, 2011.

79. H. A. Al-Asadi, M. H. Al-Mansoori, S. Hitam, M. I. Saripan, and M. A. Mahdi, “Analytical study of nonlinear phase shift through stimulated Brillouin scattering in single mode fibre with pump power recycling technique,” Journal of Optics, vol. 13 no. 10, 2011.

80. H. A. Al-Asadi, M. H. Abu Bakar, M. H. Al-Mansoori, F. R. Mahamd Adikan, and M. A. Mahdi, “Analytical analysis of second-order Stokes wave in Brillouin ring fiber laser,” Optics. Express, vol. 19, no. 25, pp. 25741- 25748, 2011.

81. M. Al-Asadi, Y. A. Al-Asadi, and H. A. Al-Asadi, “Architectural Analysis of Multi-Agents Educational Model in Web-Learning Environments,” Journal of Emerging Trends in Computing and Information Sciences, vol. 3, no. 6, 2012.

82. M. A. Abed and H. A. Al-Asadi, “Simplifying Handwritten Characters Recognition Using a Particle Swarm Optimization Approach,” European Academic Research, vol 1, pp. 535- 552, 2013.

83. M. A. Abed and H. A. Al-Asadi, “High Accuracy Arabic Handwritten Characters Recognition using (EBPANN) Architecture,” International Journal of Advanced Computer Science and Applications (IJACSA), vol. 6, no. 2, pp. 145-152, 2015.

84. H. A. Al-Asadi and M. A. Abed, “Object Recognition Using Artificial Fish Swarm Algorithm on Fourier Descriptors,” American Journal of Engineering, Technology and Society, vol 2, no. 5, pp. 105-110, 2015.

85. H. A. Al-Asadi, “Energy Efficient Hierarchical Clustering Mechanism for Wireless Sensor Network Fields,” International Journal of Computer Applications, vol. 153, no. 10, pp. 42-46, 2016.

86. H. A. Al-Asadi, “Hybrid Clustering Methodology using Optical Communication in Wireless Sensor Networks,” International Journal on Advanced Science, Engineering and Information Technology, vol. 7, no. 1, 2017.

87. H. A. Al-Asadi, “Mobile Clustering Algorithm for Effective Clustering in Dense Wireless Sensor Networks,” European Journal of Advances in Engineering & Technology (EJAET), vol. 4, no. 1, pp. 1-6, 2017.

88. H. A. Al-Asadi, “Integrated Energy Efficient Clustering Strategy for Wireless Sensor Networks,” The Journal of Middle East and North Africa Sciences, vol. 3, pp. 8-13, 2017.

89. H. A. Al-Asadi, M. A. Al-Asadi, and N. A. Noori, “Optimization Noise Figure of Fiber Raman Amplifier based on Bat Algorithm in Optical Communication network,” International Journal of Engineering & Technology, vol. 7, no. 2, pp. 874-879, 2018.

90. H. A. Al-Asadi, and N. A. M. B. A. Hambali, “Experimental evaluation and theoretical investigations of fiber Raman amplifiers and its gain optimization based on single forward pump,” Journal of Laser Applications, vol. 26, no. 4, 2014.

91. H. A. Al-Asadi, “Nonlinear Phase Shift due to Stimulated Brillouin Scattering in Strong Saturation Regime for Different Types of Fibers,” Journal of Optical Communications (JOC), vol. 36, no. 3, pp. 211–216, 2014.

92. H. A. Al-Asadi, “A Novel and Enhanced Distributed Clustering Methodology for Large Scale Wireless Sensor Network Fields,” Journal of Computational and Theoretical Nanoscience, vol. 16, no. 2, pp. 633-638, February. 2019.

93. N. F. H. Husshini, N. A. M. A. Hambali, M. H. A. Wahid, M. M. Shahimin, N. Ali, M. N. M. Yasin, and H. A. AL-Asadi, “Stability Multi-Wavelength Fiber Laser Employing Semiconductor Optical Amplifier in Nonlinear Optical Loop Mirror with Different Gain Medium,” SPIE, vol. 63, no. 5, pp. 1241, 2019.

94. N. F. H. Husshini, N. A. M. A. Hambali, M. H. A. Wahid, M. M. Shahimin, M. N. M. Yasin, N. Ali, and H. A. AL-Asadi, “Multiwavelength Fiber Laser Employing Semiconductor Optical Amplifier in Nonlinear Optical Loop Mirror with Polarization Controller and Polarization Maintaining Fiber,” In CAPE2019, 8 January 2020.

95. N. F. H. Husshini, N. A. M. A. Hambali, M. H. A. Wahid, M. M. Shahimin, M. N. M. Yasin, N. Ali, and H. A. AL-Asadi, “Characteristics of Multiwavelength Fiber Laser Employing Semiconductor Optical Amplifier in Nonlinear Optical Loop Mirror with Different Length Polarization Maintaining Fiber,” In CAPE2019. 8 January 2020.
96. H. A. Al-Asadi, A. Alhassani, N. A. A. Hambali, M. A. AlSibahee, S. A. Alwazzan, and A. M. Jasim, “Priority Incorporated Zone Based Distributed Clustering Algorithm For Heterogeneous Wireless Sensor Network,” Advances in Science, Technology and Engineering Systems Journal, vol. 4, no. 5, pp. 306-313, 2019.
97. H. A. Al-Asadi, M. T. Aziz, M. Dhiya, and A. Abdulmajed, “A Network Analysis for Finding the Shortest Path in Hospital Information System with GIS and GPS,” Journal of Network Computing and Applications, vol. 5, no. 1, pp. 10-23, 2020.
98. H. A. Al-Asadi, L. Mohamad, and M. Nassr, “Self-Phase Modulation Mitigation in Coherent Optical Communication Systems,” International Journal of Microwave and Optical Technology, vol. 16, no. 6, pp. 618-625, 2021.
99. H. A. Al-Asadi, “An Optimal Algorithm for Better Efficiency in Multimedia Application on WSN, IET Wireless Sensor Systems,” vol. 11, no. 6, pp. 248-258, December 2021.
100. H. A. Al-Asadi, “1st Edition: Privacy and Security Challenges in Cloud Computing A Holistic Approach,” Intelligent Internet of Things for Smart Healthcare Systems, Scopus, Taylor @Francis, CRC Press. (Book Chapter: Enhanced Hybrid and Highly Secure Cryptosystem for Mitigating Security Issues in Cloud Environments).
101. H. A. Al-Asadi, R. Hasan, M. Nassr, and M. Anbar, “Power Consumption in Wireless Sensor Network: A Machine Learning Approach, Computing,” Performance and Communication Systems, Clausius Scientific Press, vol. 6, no. 1, pp. 24-37, 2022.
102. M. Anbar, M. Nassr, M. Abdallah, E. Vostorgina, M. Kolistratov, and H. A. Al-Asadi, “Sidelobe Canceller Performance Evaluation using Sample Matrix Inversion algorithm, (The 4th 2022 International Youth Conference on Radio Electronics,” In Electrical and Power Engineering (REEPE), pp. 1-6, March. 2022.
103. H. A. Al-Asadi, H. A. Ahmed, A. Al-Hassani, and N. A. M. A. Hambali, “A Novel and Enhanced Routing Protocol for Large Scale Disruption Tolerant Mobile Ad hoc Networks,” International Journal of Computing, vol. 21, no. 3, pp. 325-332, 2022.
104. H. A. Al-Asadi, “An Overview of Routing Protocols Performance in Wireless Multimedia Sensor Networks,” 3rd Information Technology To Enhance e-learning and Other Application (IT-ELA), Baghdad, Iraq, pp. 133-139, 2022.
105. H. A. Al-Asadi, and H. A. Ahmed, “A Tri-Classes Method for Studying the Impact of Nodes and Sinks Number on Received Packets Ratio of MANETs Routing Protocols,” 2023 15th International Conference on Developments in eSystems Engineering (DeSE), Baghdad & Anbar, Iraq, pp. 521-526, 2023.
106. R. Younes, F. Ghosna, M. Nassr, M. Anbar, and H. A. Al-Asadi, “Predicting BER value in OFDM-FSO systems using Machine Learning techniques,” Optica Pura y Aplicada, vol. 55, no. 4, pp. 1, 2022.
107. L. Hasan, M. Nassr, M. Anbar, and H. A. Al-Asadi, “Inverted U-shaped Frequency Reconfigurable Microstrip patch antenna for 5G communication systems, Optica Pura y Aplicada,” vol. 56, no. 3, pp. 1-5.
108. H. O. M. Al-Jabry, and H. A. Al-Asadi, “Enhancing Wireless Multimedia Sensor Networks with Optimization Algorithms: A Review,” IEEE Al-Sadiq International Conference on Communication and Information Technology, pp. 153-158, 2023.

109. H. Al-Jabry, and H. A. Al-Asadi, “Enhancing Packet Reliability in Wireless Multimedia Sensor Networks using a Proposed Distributed Dynamic Cooperative Protocol (DDCP) Routing Algorithm,” Iraqi Journal for Electrical and Electronic Engineering, vol.19, no. 2, pp. 158-168.
110. H. H. K. Al-Maliki and H. A. A. Al-Asadi, “Enhancing Performance in Vehicular Ad Hoc Networks: The Optimization Algorithm Perspective,” Proceedings - International Conference on Developments in eSystems Engineering (DeSE), pp. 456–461, 2023.
111. H. A. Ahmed, and H. A. A. Al-Asadi, “An Optimized Link State Routing Protocol with a Blockchain Framework for Efficient Video-Packet Transmission and Security over Mobile Ad-Hoc Networks,” Journal of Sensor and Actuator Networks, vol. 13, no. 2.
112. T. K. Lakshmi and J. Dheeba, "Digital Decision Making in Dentistry: Analysis and Prediction of Periodontitis Using Machine Learning Approach," International Journal of Next-Generation Computing, vol. 13, no. 3, 2022.
113. T. K. Lakshmi and J. Dheeba, "Digitalization in Dental Problem Diagnosis, Prediction and Analysis: A Machine Learning Perspective of Periodontitis," International Journal of Recent Technology and Engineering, vol. 8, no. 5, pp. 67-74, 2020.
114. T. K. Lakshmi and J. Dheeba, "Predictive Analysis of Periodontal Disease Progression Using Machine Learning: Enhancing Oral Health Assessment and Treatment Planning," International Journal of Intelligent Systems and Applications in Engineering, vol. 11, no. 10s, pp. 660–671, 2023.
115. Vinoth Kumar, U. Padmavathi, C. Prasanna Ranjith, J. Balaji, C. N. S. Vinoth Kumar, "An Elixir for Blockchain Scalability with Channel Based Clustered Sharding," Scalable Computing: Practice and Experience, vol. 25, no. 2, 2024.
116. C. Prasanna Ranjith, K. Natarajan, S. Madhuri, M. T. Ramakrishna, C. R. Bhat, and V. K. Venkatesan, "Image Processing Using Feature-Based Segmentation Techniques for the Analysis of Medical Images," Engineering Proceedings, vol. 59, no. 1, 2023.
117. R. Natarajan, N. Mahadev, B. S. Alfurhood, C. Prasanna Ranjith, J. Zaki, and M. N. Manu, "Optimizing Radio Access in 5G Vehicle Networks Using Novel Machine Learning-Driven Resource Management," Optical and Quantum Electronics, vol. 55, no. 14, Article 1270, 2023.
118. R. Venkatarathinam, R. Sivakami, C. Prasanna Ranjith, M. T. R., E. Mohan, and V. V. Kumar, "Ensemble of Homogenous and Heterogeneous Classifiers using K-Fold Cross Validation with Reduced Entropy," International Journal on Recent and Innovation Trends in Computing and Communication, vol. 11, no. 8s, pp. 315–324, 2023.
119. J. Selwyn and C. Prasanna Ranjith, "Towards Designing a Planet Walk Simulation in a Controlled Environment," International Journal of Data Informatics and Intelligent Computing, vol. 2, no. 1, pp. 70-77, 2023.
120. P. Ranjith, B. M. Hardas, M. S. K. Mohideen, N. N. Raj, N. R. Robert, and P. Mohan, "Robust Deep Learning Empowered Real Time Object Detection for Unmanned Aerial Vehicles Based Surveillance Applications," Journal of Mobile Multimedia, vol. 19, no. 2, pp. 451–476, 2022.
121. N. Rajesh, A. Irudayasamy, M. S. K. Mohideen, and P. Ranjith, "Classification of Vital Genetic Syndromes Associated With Diabetes Using ANN-Based CapsNet Approach," International Journal of e-Collaboration (IJeC), vol. 18, no. 3, pp. 1-18, 2022.
122. A. A. A. Shehhi, R. F. A. Mamari, and P. Ranjith, "An Impact of Internet Technology on the Social Behavior Issues Among Children in Al Batinah Governorate During 2020-2021,"

International Journal of Information Technology, Research and Applications, vol. 1, no. 1, pp. 25-32, 2022.

123. N. Rajesh and C. Prasanna Ranjith, "Analysis of Origin, Risk Factors Influencing COVID-19 Cases in India and Its Prediction Using Ensemble Learning," International Journal of System Assurance Engineering and Management, 2021.

124. P. Ranjith, F. Sheikha, N. Noora, and F. Farma, "Smart Video-Based Sign Language App: Impacts on Communication for Deaf and Dumb Individuals," International Journal of Innovative Research in Advanced Engineering, vol. 8, pp. 277-282, 2021.

125. C. Newton, P. Ranjith, and S. K. Mohideen, "OPTANT - Optimized Ant Colony Routing for Mobile Ad-Hoc Networks," International Journal of Advanced Research Trends in Engineering and Technology (IJARTET), vol. 4, no. 8, 2017.

126. C. Newton, P. Ranjith, and M. J. Aragon, "A Mathematical Model for LOCA-GAMNET," International Journal in IT and Engineering, vol. 4, no. 11, pp. 18-22, 2016.

127. C. Newton, M. Jayakkumar, and P. Ranjith, "xMIDURR: A Quality of Service Technique to Save Energy in Mobile Ad Hoc Networks," International Journal of Control Theory and Applications, vol. 9, no. 27, pp. 561-567, 2016.

128. C. Newton, P. Ranjith, and M. J. Aragon, "Location Aware Routing for MANET Using Genetic Algorithm," International Journal of Control Theory and Applications, vol. 9, no. 27, pp. 219-225, 2016.

129. C. Newton, P. Ranjith, and M. J. Aragon, "Optimizing Routing in MANET Using Genetic Algorithms," International Journal of Applied Engineering Research (IJAER), vol. 10, pp. 40124-40129, Nov. 2015.

130. C. Newton, P. Ranjith, and M. J. Aragon, "Mobility Prediction in MANET Routing Using Genetic Algorithm," International Journal of Innovations & Advancement in Computer Science (IJIACS), vol. 3, no. 10, pp. 28-33, Dec. 2014.

131. P. P. Anand, U. K. Kanike, P. Paramasivan, S. S. Rajest, R. Regin, and S. S. Priscila, "Embracing Industry 5.0: Pioneering Next-Generation Technology for a Flourishing Human Experience and Societal Advancement," FMDB Transactions on Sustainable Social Sciences Letters, vol.1, no. 1, pp. 43–55, 2023.

132. G. Gnanaguru, S. S. Priscila, M. Sakthivanitha, S. Radhakrishnan, S. S. Rajest, and S. Singh, "Thorough analysis of deep learning methods for diagnosis of COVID-19 CT images," in Advances in Medical Technologies and Clinical Practice, IGI Global, pp. 46–65, 2024.

133. G. Gowthami and S. S. Priscila, "Tuna swarm optimisation-based feature selection and deep multimodal-sequential-hierarchical progressive network for network intrusion detection approach," Int. J. Crit. Comput.-based Syst., vol. 10, no. 4, pp. 355–374, 2023.

134. A. J. Obaid, S. Suman Rajest, S. Silvia Priscila, T. Shynu, and S. A. Ettyem, "Dense convolution neural network for lung cancer classification and staging of the diseases using NSCLC images," in Proceedings of Data Analytics and Management, Singapore; Singapore: Springer Nature, pp. 361–372, 2023.

135. S. S. Priscila and A. Jayanthiladevi, "A study on different hybrid deep learning approaches to forecast air pollution concentration of particulate matter," in 2023 9th International Conference on Advanced Computing and Communication Systems (ICACCS), Coimbatore, India, 2023.

136. S. S. Priscila, S. S. Rajest, R. Regin, and T. Shynu, "Classification of Satellite Photographs Utilizing the K-Nearest Neighbor Algorithm," Central Asian Journal of Mathematical Theory and Computer Sciences, vol. 4, no. 6, pp. 53–71, 2023.