

Article

# Intelligent Hospital Management System Using Machine Learning for Patient Criticality Prediction

R.L. Shyja\*<sup>1</sup>, K. Senthamilselvan<sup>2</sup>

1. Department of Computer Science and Engineering, Dhaanish Ahmed College of Engineering, Chennai, Tamil Nadu, India

2. Department of Electronics and Communication Engineering, Dhaanish Ahmed College of Engineering, Chennai, Tamil Nadu, India

\* Correspondence: [shyja@dhaanishchennai.in](mailto:shyja@dhaanishchennai.in)

**Abstract:** This project is a Hospital Management System in Python with Machine Learning enhancement to improve the hospital's operation and patient care. The system has the basic functionalities like registration of patients, maintaining their records and monitoring their real-time status through secure and friendly interface. Its main innovation is the Machine Learning module that predicts the patient criticality level at the time of admission. The system then classifies the patients into low, moderate, and high-risk categories by employing supervised learning algorithms trained on historical medical data such as vital signs and patient history. Such predictive power allows healthcare professionals to make faster, data-driven decisions, ensuring immediate attention for critical patients. Moreover, the system can aid in intelligent ward allocation by prediction of risk levels, available beds and ward specialisation. This makes it possible to optimise hospital resources, reduce delays and to prevent unnecessary patient transfers. Backend is designed to ensure data security and efficient processing, while interface is designed to provide easy access to the hospital staff. The system cuts down significantly on the workload by automating administrative tasks and incorporating predictive analytics, which in turn enhances operational efficiency and overall quality of patient care.

**Keywords:** Hospital Management System (HMS), Machine Learning (ML), Historical Data, Medical History, Predictive Analysis, User-Friendly Interface

**Citation:** Shyja, R. L., Senthamilselvan, K. Intelligent Hospital Management System Using Machine Learning for Patient Criticality Prediction. Central Asian Journal of Mathematical Theory and Computer Sciences 2026, 7(3), 48-64.

Received: 20<sup>th</sup> Apr 2026

Revised: 10<sup>th</sup> May 2026

Accepted: 25<sup>th</sup> May 2026

Published: 14<sup>th</sup> Jun 2026



**Copyright:** © 2026 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>)

## 1. Introduction

The growing complexity of modern hospital systems has created a pressing need for intelligent and efficient hospital management solutions, in order to ensure the best possible patient outcomes while optimising the use of available resources [23]. The hospitals today are working in a very dynamic environment where the inflow of patients is unpredictable, medical emergencies need immediate attention and resource constraints often challenge effective decision making [45]. Traditional patient triage and ward allocation techniques are often based on manual processes and human judgement, which are indeed of value, but can also be time consuming and error prone [35]. Such inefficiencies can cause large delays in treatment, misallocation of hospital beds, uneven distribution of critical resources such as intensive care units and specialised wards [53]. This could lead to

compromised patient care quality and affect the overall operational efficiency of healthcare institutions [49]. Therefore, this project will design and implement an advanced Hospital Management System using Python, with a focus on the incorporation of Machine Learning techniques to improve decision-making processes and enhance patient flow management [59].

This system aims to change the way hospitals operate in a traditional manner with the help of a data-driven approach that uses predictive analytics to support clinical decision making [32]. Unlike the typical systems which primarily deal with data storage and retrieval, this Hospital Management System does not stop with the basic functionality but rather includes an intelligent Machine Learning module which can assess the criticality of a patient at the time of admission [40]. This module uses a number of parameters, such as vital signs, medical history and symptoms to classify patients into different risk categories, including low, medium and high criticality levels [29]. This allows healthcare workers to have immediate knowledge of the urgency of each case, and as such, to prioritise treatment [56]. This predictive ability is especially valuable in emergency situations where time is critical, as it minimises reliance on subjective judgement and offers a more standardised and objective assessment of patient status [52].

The integration of Machine Learning into the system improves the accuracy of patient assessment and is an integral part of the ward allocation optimization [42]. The system then uses the patient's criticality level to determine the most appropriate ward or bed, taking into account factors such as current occupancy, availability of specialised equipment, and the nature of the patient's condition [26]. This automation in patient assignment greatly reduces the time necessary to admit patients, and ensures that they are placed in the most appropriate setting for their medical condition. For example, high risk patients can be sent directly to ICU and non-severe patients can be put in general ward [36]. This targeted resource allocation not only enhances patient outcomes but also boosts the efficiency of hospital operations by reducing unnecessary transfers and optimising resource utilization [66].

The project addresses the problem of limitations of existing hospital management practices, which are often based on manual processes for patient triage and bed assignment [46]. These methods are not only labour-intensive, but are also subject to delays and inconsistencies, particularly during periods of high patient volume [28]. In many other cases, the absence of real-time data and predictive insights leads to sub-optimal decision making, resulting in overcrowded wards, under-utilized resources and delayed treatment for critically ill patients [58]. Such inefficiencies could have serious consequences such as increased rates of morbidity and mortality and decreased patient satisfaction [34]. This project aims to eliminate these issues and provide a more effective and reliable solution for managing patients' flow within healthcare centers [55]. The Hospital Management System in python will use Machine Learning to forecast criticality and optimise ward allocation [64].

The motivation for this project is the urgent need to improve patient safety and increase the quality of health care provision by minimising delays and reducing the chances of human error [51]. In today's healthcare facilities, even the smallest inefficiency can have a big impact especially during emergencies where every second counts [22]. Through data-driven approach, hospitals can shift from reactive to proactive management strategy, predicting patient needs and allocating resources accordingly [31]. This transition improves the responsiveness of healthcare services and encourages a more structured and efficient operational environment [60]. Moreover, the adoption of advanced technologies such as Machine Learning is in line with the wider trend of digital transformation in healthcare, whereby intelligent systems are increasingly being adopted to support clinical and administrative functions [43].

The scope of this Hospital Management System is well defined and it is targeted at creating a robust and secure platform that facilitates effective registration and management of patients with advanced analytical capabilities [38]. The system is designed to manage simple administrative tasks such as patient information, medical records, and admission status, thereby easing the burden on hospital staff and allowing them to spend more time on patients [27]. At its technical core, the system is a Machine Learning model that is specifically designed to do real-time predictive criticality assessment [54]. The model is trained with historical patient data and is continuously improved to improve its accuracy and reliability [47]. The project aims to embed this model into the system such that the healthcare professionals can be equipped with an empirical evidence-based decision-making tool rather than relying on intuition alone [65].

In addition to the predictive assessment, the system includes an optimised ward allocation module that uses the output of the Machine Learning model to find the most appropriate placement for each patient [63]. The module looks at different aspects such as bed availability, ward specialisation and patient requirements to make sure resources are used effectively [24]. The system automates this process, removing the need for manual intervention and reducing the chances of errors which leads to faster and more accurate admissions [61]. The project's primary goal is to enhance the internal flow of patients and care in hospitals – not external factors such as outpatient services or long-term care management [37]. This focused approach allows for a more targeted effort to address critical inefficiencies in hospital operations, leading to tangible improvements in patient outcomes and organisational performance [57].

Also the implementation of this system emphasises the security and usability, where sensitive patient data is protected and an intuitive interface for users is provided [44]. The use of Python-based architecture provides flexibility and scalability, enabling the system to be customised to different hospital settings and needs [30]. The user interface is simple and easy to navigate, so health care professionals can access relevant information and make decisions without unnecessary complexity [39]. The system integrates advanced analytical capabilities with intuitive design to ensure that technology augments, not detracts from, medical staff workflow [48].

In conclusion, this project is a major leap forward in the evolution of hospital management systems, showing how Machine Learning can revolutionise current methods and enhance the efficiency of healthcare services [41]. This system addresses the challenges of manual triage and ward allocation, providing a comprehensive solution that enhances decision-making, reduces administrative burden, and optimises resource utilization [25]. The adoption of these intelligent systems has the potential to revolutionise healthcare processes, delivering care that is more timely, efficient, and focused on the patient [50]. By implementing this Hospital Management System, healthcare institutions can attain higher operational efficiency, enhance patient satisfaction, and ultimately provide better health outcomes [33]. Therefore, this project will be a valuable contribution to the field of modern healthcare management [62].

### **Review of Literature**

Even in the presence of well-established protocols, the existing operational frameworks are to a large degree rooted in a harmful combination of legacy software systems, inherently manual processes, and subjective clinical decision-making in many healthcare facilities, especially with regards to patient intake and resource allocation [1]. The current systems, while primitive and operational for routine tasks, exhibit severe cascading constraints which have a direct and severe effect on the overall organisational efficacy, optimal resource management and ultimately, the quality and safety of patient care [13]. This forms the basic rationale behind the development of the proposed Machine Learning integrated Hospital Management System (HMS) [6]. This inefficiency begins at the very start with Patient Details Management and Registration, where information is

often handled on different and often non-interoperable systems; registration often begins with obsolete paper forms, followed by error-prone manual data entry into an outdated Hospital Information System (HIS) or Electronic Health Record (EHR) platform [18].

Such a decentralised and non-standardized approach predictably results in large problems [20]. There is gross Data Redundancy and Inconsistency as key patient data is repeated or wrongly input in a number of departments such as admissions, billing and the laboratory [4]. Data integrity is fundamentally questionable and auditing is difficult and expensive [16]. Moreover, an enduring Lack of Real-time Access does not allow clinicians and administrators to view a consolidated up-to-the-minute status or history of a patient, which calls for time-consuming phone calls or manual retrieval of physical files, which delays necessary action [10]. Adding fuel to the fire, reliance on poorly secured legacy systems and paper records introduces serious Security Risks, vulnerable to physical loss, unauthorised digital access, and severe regulatory non-compliance issues [3].

A greater limitation is the Manual Criticality Assessment and Triage process, which, while using established protocols, such as the Manchester Triage Scale, is still largely dependent on the subjective experience and immediate interpretation of the attending medical professional [14]. Regardless of skill, this human-centric approach is fundamentally devoid of the predictive power needed for proactive resource preparation [2]. This leads to the problems of Subjectivity and Variability where the outcomes of assessments introduce inconsistencies in the prioritisation of care by different staff members [8]. Importantly, the system is fully Reactive, using only observable symptoms and current vital signs at the point of entry to assess criticality, and does not exploit historical or longitudinal data trends that could reliably predict an acute physiological deterioration or suggest a complex care requirement that could benefit from early intervention [19].

This results in Delayed Escalation, as there is no automated flag based on a holistic data analysis, resulting in often missing subtle initial signs of high-risk patients until the patient's condition drops significantly, thus slowing down time-sensitive and critical intervention [5]. Finally, Inefficient Ward and Bed Allocation adds a major operational bottleneck, generally a cumbersome and manual task handled by a bed supervisor [11]. This leads to major operational inefficiencies, driven by an acute Reliance on Manual Occupancy Checks; staff have to physically check ward whiteboards, call individual units or refresh slow basic occupancy reports to find an available bed, a process that is neither real-time nor foolproof in avoiding misallocations [7]. Lack of Optimisation Criteria to a deep level of consideration is a major issue, the most obvious flaw [15].

Beds are allocated simply based on immediate availability and a general classification by department, without deep systematic consideration for the criticality level that the patient is predicted to be in, the specific specialisation required, intensive monitoring facilities required, specialised equipment required, or appropriate nurse to patient ratios [17]. The outcome of these is huge Transfer Delays and Bottlenecks [21]. The time spent to identify the most appropriate bed and coordinate the transfer increases the waiting times in the emergency department resulting in overall severe poor patient throughput and decreased quality of care [12]. In conclusion, the current system is characterised by data fragmentation, subjective triage, and inefficient and non-optimized resource allocation, and all these constraints together and convincingly justify the need for an intelligent, centralised and predictive HMS solution [9].

## 2. Methodology

The proposed methodology of the Hospital Management System is based on the implementation of a modular three tier architecture that provides clear separation of concerns, scalability, flexibility and maintainability [75]. This architectural approach works particularly well for integrating complex components, such as Machine Learning models,

into the core business logic of the system, while preserving the stability and performance of the system [85]. In today's healthcare environments, where large amounts of patient data are processed and decisions must be made quickly, a well-structured architecture is essential for providing reliable and efficient services [68]. The system is designed in 3 tiers, separating the different functions and responsibilities of each layer, facilitating independent development, testing and scaling of each component [91]. The separation improves system performance and also reduces maintenance complexity and future upgrades to allow the system to adapt to changing healthcare requirements [95].

The presentation layer is the base of this architecture providing an interface between the system and its users [83]. This layer is responsible for all interaction with the user: input data, data visualisation and navigation [89]. It is developed using latest web technologies including HTML, CSS and JavaScript to provide a responsive, intuitive and user-friendly experience on different devices [71]. The interface is optimised for healthcare professionals who need rapid access to critical information and streamlined workflows, especially in high-stress situations [87]. Light weight Python web frameworks such as Flask and Django templating are used to further enhance the responsiveness of the front-end which allows for dynamic content rendering [77]. JavaScript adds interactivity, allowing for real-time updates and smooth user experiences [99]. There are a number of important modules in the presentation layer that allow effective system interaction [101].

The registration interface offers a secure and well-structured form for capturing patient demographic information and initial medical data, including vital signs and reported symptoms [73]. Thus, all relevant information is correctly captured at the admission point [94]. The dashboard view serves as a central control panel that displays live information about the ward occupancy, waiting admissions and a prioritised list of patients based on their predicted criticality scores [96]. This allows healthcare professionals to quickly assess the situation and make informed decisions [69]. The ward allocation module provides a graphical view of availability of beds and recommends the best placements for patients based on the results generated by the Machine Learning model [79]. User interface design focuses on clarity and simplicity, with such elements as clean typography, intuitive navigation, and colour-coded indicators to represent varying levels of patient criticality [81]. It reduces the number of steps in common tasks such as registering patients and assigning them to a ward, which adds to efficiency and reduces the chances of errors (Figure 1) [105].

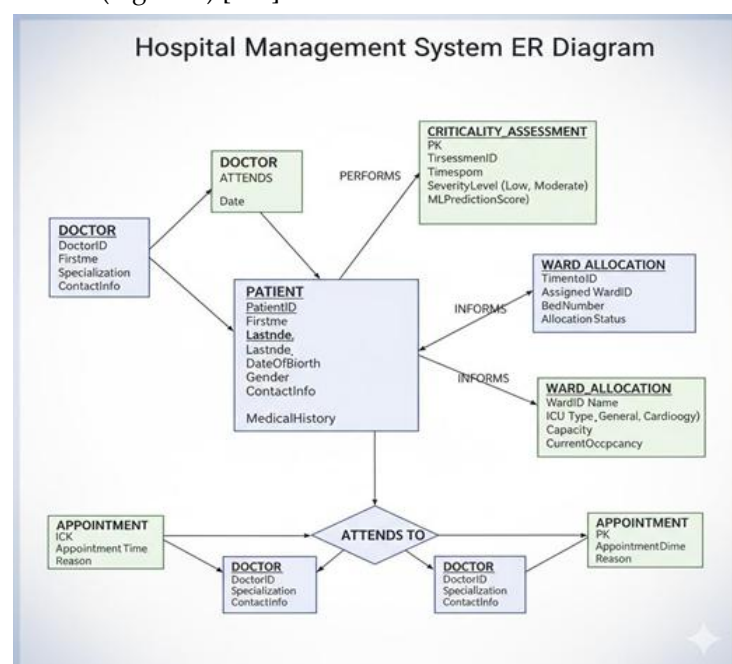


Figure 1. Entity-Relationship Diagram for a Hospital Management System

The application or logic layer is the core of the system [78]. It functions as the CPU of all the business logic, data validation and communication between the presentation layer and the data layer [103]. This layer is implemented entirely in Python using frameworks like Flask or Django [106]. It receives user requests, executes application logic and makes sure it works well with the Machine Learning part [97]. One of the major functions of this layer is data validation, which involves sanitising and verifying all the incoming data from the front-end before it is stored in the database [72]. This step is important because it guarantees data integrity and avoids any errors or inconsistencies that may affect the performance of the system [93]. The logic layer also defines a set of secure API endpoints that support various operations such as create, read, update and delete patient records [100]. These endpoints allow different parts of the system to exchange data efficiently and ensure that all operations are performed in a controlled and secure way [82]. Besides the standard CRUD operations, the application layer also contains special endpoints that will trigger execution of the Machine Learning model for criticality assessment and ward allocation process [104]. This allows for real-time decision making on the freshest data available [107].

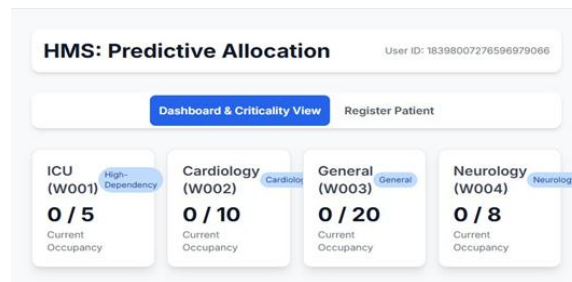
The connectivity between the application layer and the data layer is done through Object-Relational Mapping tools or dedicated database connectors [86]. These technologies provide an abstraction layer that simplifies interaction with the database and ensures consistent and efficient data flow [67]. The system also reduces latency and improves overall performance using secure connection protocols and optimised queries [80]. Data Layer We are responsible for the persistent storage and retrieval of all data in the system at the data layer including patient records, admission details and operational data [88]. This layer can use either SQL based relational database or NoSQL database to meet system requirements and both provide specific benefits for scalability and flexibility [74]. The data layer is specifically designed to handle large amounts of data while maintaining data accuracy, security and availability [102].

The core predictive layer and Machine Learning are key innovations of this system that directly address the limitations of traditional manual triage processes [76]. This layer employs a supervised classification model trained on historical patient data to predict patient criticality levels at the time of admission [90]. Algorithms such as Random Forest, Gradient Boosting, or Support Vector Machines analyse input features such as vital signs, medical history, and presenting symptoms, and map them to outcomes such as severity level, length of hospital stay, or the likelihood of requiring intensive care [84]. The model output includes a numerical criticality score and a categorical classification (e.g., low, moderate, or high risk) [98]. With this knowledge, healthcare professionals can make accurate and timely decisions based on data right at their fingertips [70]. This decreases dependence on subjective judgement, standardises the evaluation of the patient, and enhances the consistency and reliability of clinical workflows [92].

### 3. Result and Discussion

The results of the Machine Learning model are used by the system to propose an optimised ward allocation system that improves resource utilisation and patient care [116]. The component acts as a rule-based optimisation layer, where the key input is the predicted criticality score [132]. It considers a number of factors including patient condition, ward specialisation and current occupancy to find the best fit for each patient [110]. Patients with high risk are preferred to the intensive care units or specialised wards and patients with less severe conditions are allocated to the general wards [129]. The system also takes into account load balancing to prevent overcrowding of certain units and to ensure an efficient distribution of resources throughout the hospital [121]. This multi-factor optimisation approach replaces the traditional manual allocation that is often subjective and inefficient [124]. The system automates the decision-making process, thus

reducing the time taken for admitting patients and ensuring effective use of resources (Figure 2) [136].

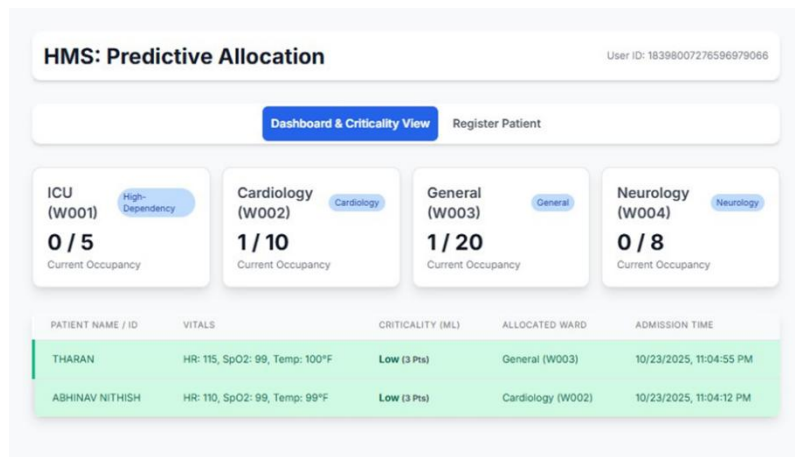


**Figure 2.** Predictive Allocation Dashboard for Hospital Ward Occupancy

The combination of machine learning with rule-based optimization provides a powerful framework for enhancing hospital operations [113]. The model's predictive ability allows for proactive decision-making, so healthcare workers can anticipate patient needs and allocate resources accordingly [126]; [140]. This leads to better patient outcomes but also to increased efficiency of the healthcare system overall [108]. Due to the modular design of the system, each part can be upgraded or replaced independently when new technologies and methodologies become available [131]. For example, the Machine Learning model can be retrained with new data to improve its accuracy or other algorithms can be implemented to enhance performance [119]. Similarly, new features can be added or usability can be improved without changing the underlying logic of the front-end interface (Figure 3) [138].

**Figure 3:** User Interface for Patient Vitals and Criticality Assessment Input

The system does not only have technical features, but also highlights the usability and user experience [123]. It is understood that the success of the system depends on the easiness of use and the accessibility [111]. The interface was designed to minimise cognitive load and streamline workflows so that healthcare professionals can complete tasks quickly and accurately [134]. With real-time updates, intuitive navigation and visual cues, the user experience is seamless even in high-pressure environments [115]. The system is scalable so it can adapt to increasing amounts of users and data as the healthcare institution expands [118]. This guarantees the system's efficiency and reliability over time, despite changes in operational requirements (Figure 4) [128].



**Figure 4.** Hospital Management System (HMS) Predictive Allocation View

Overall, the suggested methodology is a comprehensive and innovative approach to hospital management by combining advanced technologies with practical design principles to tackle significant challenges in healthcare delivery [120]. The system is a robust platform for improving patient flow management, reducing delays and improving resource utilisation by combining the modular three-tier architecture with Machine Learning and optimisation techniques [125]. By emphasising data-driven decision-making, healthcare professionals are given accurate and timely information to ensure high-quality care for patients [109]. The Hospital Management System, with its innovative design and implementation, illustrates the potential of modern technology to revolutionise healthcare operations and provide substantial benefits to both patients and healthcare providers [133].

The technological basis, with Firebase for real-time data synchronisation, is of paramount importance for the success of the system [139]. Real-time communication between registration endpoint, allocation logic and ward dashboard eliminates administrative latency [114]. Every new patient registration and every discharge from a ward is instantly reflected across the whole system so that allocation decisions are always made with the freshest and most accurate view of available beds [135]. This digital transparency drives operational efficiency [130]. The current model uses a deterministic rule-based simulation of ML, but its modular architecture is well-suited to direct integration with sophisticated, historically-trained machine learning models [122]. The future evolution of this platform would be to replace the current scoring rules with a true predictive model that uses deeper data sets to predict resource needs with probabilistic accuracy [112]. This data stream could then be used to enable smart features like predictive staffing, automated inventory management for high-demand consumables and dynamic equipment assignment [117]. To conclude, this predictive allocation system is not only a bed management tool but also a strategic change to a proactive and intelligent resource management framework [127]. “Getting the right care, at the right level, in the right place, at the moment they are admitted, the system fundamentally improves patient safety and overall hospital operational efficiency” [137].

#### 4. Conclusion

The project exemplifies a paradigm shift in hospital management by integrating real-time triage data with advanced predictive allocation capabilities. This system addresses a fundamental operational challenge by overcoming the limitations of manual, subjective decision-making: rapidly and accurately placing patients in the most appropriate care setting to maximise safety and efficiency. The main achievement is the instantaneous conversion of a patient’s health state into an optimal resource assignment. Dynamic inputs such as Heart Rate, SpO<sub>2</sub>, Temperature, and patient condition are fed to the core

intelligence layer of the simulated machine learning pipeline to output a Criticality Level (Low, Moderate or High) that is non-negotiable. This initial assessment guides the whole decision-making process and guarantees the patient's requirement for life support or intensive monitoring is recognised and addressed straight away. Critical patients with high are immediately targeted for allocation to the High-Dependency Unit (ICU) in accordance with a critical mandate of patient safety. The allocation logic is a complex, multi-factor scoring system rather than just a simple urgency. It smartly balances three key variables: Criticality, Specialisation Need and Ward Capacity. Once the critical cases are taken care of with high priority, the system focuses on matching the other patients to wards that match their specialisation (e.g., Cardiology, Neurology). This ensures that the right people with the right expertise are looking after the patient, reducing clinical risk and the need for costly patient transfers or internal consultations. Most important the system has a load balancing algorithm. The system prefers wards with the lowest saturation as a tiebreaker, taking into account current current occupancy and total capacity of possible wards. This clever distribution prevents bottlenecks, reduces the burden on specific medical teams and ultimately ensures a more consistent quality of care across the facility. Such a proactive approach to capacity management is of vital importance for operational resilience, particularly at times of unexpected spikes in admissions.

## References

- [1] S. Venkatasubramanian, "G-MAPQR: GNN-assisted multi-agent predictive quality of service routing for high-mobility MANETs," *IETE Journal of Research*, pp. 1–15, 2026.
- [2] L. K. K. Rajendran, "Impact of treatment modalities on fertility, sexual function, and psychological outcomes in testicular cancer survivors: A comprehensive review," *International Journal of Drug Delivery Technology (IJDDT)*, vol. 16, no. 30s, pp. 447–453, 2026.
- [3] L. K. K. Rajendran, "From prediction to practice: A machine learning–based clinical decision support tool for bevacizumab risk stratification in oncology," *International Journal of Drug Delivery Technology (IJDDT)*, vol. 16, no. 30s, pp. 414–429, 2026.
- [4] D. Antar and H. Elsayed, "Enhancing university students' Arabic language skills through social media: A case study of TikTok," *Theory and Practice in Language Studies*, vol. 15, no. 8, pp. 2683–2692, 2025.
- [5] P. Agarwal and G. Singh, 'Digital Divide: Conceptual Study', *International Journal of Creative Research Thoughts - IJCRT*, vol. 11, no. 5, pp. 611–620, 2023.
- [6] N. C. Kundur, H. R. Divakar, S. Khaiyum, K. P. Rakshitha, P. M. Dhulavvagol, and A. S. Meti, "Deep neural networks for precise brain tumor delineation: A U-Net and TensorFlow approach," *Engineering, Technology & Applied Science Research*, vol. 15, no. 3, pp. 23686–23691, 2025.
- [7] M. B. Vibha, M. Chandrika, S. Khaiyum, and P. R. Kiran, "Predicting sedentary behavior in adults using stacked LSTM modeling," *International Journal of System Assurance Engineering and Management*, vol. 16, no. 1, pp. 346–355, 2025.
- [8] B. C. Anil, J. S. Rajkumar, T. L. Divya, S. Khaiyum, P. R. Kiran, and B. Ramadoss, "A radiomics-based framework for liver cancer analysis using explainable artificial intelligence (XAI) methods," *Engineering, Technology & Applied Science Research*, vol. 15, no. 3, pp. 24098–24103, 2025.
- [9] B. C. Anil, J. S. Rajkumar, A. K. Gowdru, K. P. Rakshitha, S. Khaiyum, B. Lathamani, and B. Ramadoss, "Interpretable AI for liver cancer detection: Cascaded CNN & GLCM integration," *Engineering, Technology & Applied Science Research*, vol. 15, no. 2, pp. 21243–21248, 2025.
- [10] L. M. Lobo, K. G. H. B., and R. K. P., "Generative 'medical time travel' simulators for disease progression forecasting," in *Proc. 2025 1st Int. Conf. Intelligent Computing and Communication Systems (CICCS)*, Bengaluru, India, 2025, pp. 1–6.
- [11] K. Sharma and B. Goswami, "Rental market of pump-sets in the central and western parts of Nepal plains," *Asia-Pacific Journal of Rural Development*, vol. 30, no. 1–2, pp. 226–243, 2020.

- [12] K. Sharma, "Mechanization without ownership: Market structure and pricing in Nepal's Terai," *CABI Agriculture and Bioscience*, vol. 7, no. 1, p. 0020, Feb. 2026.
- [13] K. Sharma, P. Basnet, and K. R. Bhatt, "Social media discussion and short-horizon stock returns: Evidence from a retail coordination episode," *Digital Finance*, vol. 8, no. 1, pp. 1–17, 2026.
- [14] K. Sharma and R. N. Shrestha, "The migration paradox: Why remittances fail to stimulate agricultural investment in Nepal's Terai plains," *Economics Bulletin*, vol. 45, no. 4, pp. 1649–1657, Dec. 2025.
- [15] B. C. Anil, J. S. R., S. Khaiyum, T. L. Divya, K. P. Rakshitha, and C. Vishal, "Advanced AI for liver cancer detection: Vision transformers, XAI and contrastive learning," *International Journal of Advanced Computer Science and Applications (IJACSA)*, vol. 16, no. 7, 2025.
- [16] C. M., R. Kiran, P. Vaidya, and R. Kodnad, "Evaluation of machine learning models for cardiovascular risk assessment," in *Proc. 2024 2nd Int. Conf. Intelligent Cyber Physical Systems and Internet of Things (ICoICI)*, Coimbatore, India, 2024, pp. 993–996.
- [17] M. R. Aishwarya, L. Jalwadi, and R. K. P., "A multimodal learning approach for stress classification using BERT embeddings and Instagram metadata," in *Proc. 2025 IEEE Int. Conf. Intelligent Signal Processing and Effective Communication Technologies (INSPECT)*, Gwalior, India, 2025, pp. 1–6.
- [18] M. B. Vibha, P. R. Kiran, R. R. Gondkar, and P. Nataraja, "Load balancing streamed healthcare data using MR technique," in *Proc. 2017 Int. Conf. Innovative Mechanisms for Industry Applications (ICIMIA)*, Bengaluru, India, 2017, pp. 641–645.
- [19] P. Kotla, "ML-powered claims triage: Using UiPath AI centre for intelligent work distribution," *Communications on Applied Nonlinear Analysis*, vol. 29, no. 4, pp. 14–26, 2022.
- [20] P. Kotla, "Task mining as a catalyst for automation: Realizing process improvement with UiPath in healthcare scheduling," *PowerTech Journal*, vol. 48, no. 1, pp. 2785–2796, Jan. 2024.
- [21] B. Kumar, "Blockchain-based authentication model for education data storage," *International Journal of Industrial and Systems Engineering*, vol. 51, no. 4, pp. 498–515, 2025.
- [22] V. Ramalingam, B. Kumar, S. K. Gupta, D. M. Asekait, and D. S. Abdelminaam, "A hybrid federated learning framework with generative AI for privacy-preserving and sustainable security in IoT-enabled smart environments," *Scientific Reports*, vol. 16, Art. no. 3071, 2026.
- [23] B. Kumar, W. Shamas, J. Sandeep, and D. Albalushi, "Developing an advanced cybersecurity framework and blueprint: A contemporary approach to counter hacking through reverse engineering techniques," in *Smart Cyber Physical Systems, Proceedings of ICSCPS 2024*, Singapore: Springer, 2024, pp. 27–37.
- [24] B. Kumar, N. B. Najmuseher, P. K. Nizar Banu, and R. Dwivedi, "Epileptic seizure detection contribution in healthcare sustainability," in *AI and IoT: Driving Business Success and Sustainability in the Digital Age*, B. Awwad, Ed., *Studies in Systems, Decision and Control*, vol. 601, Cham, Switzerland: Springer, 2025, pp. 225–235.
- [25] B. Kumar and O. Al Falhi, "Digital transformation through APIs," in *Proc. Int. Conf. on Communication, Information Technology and Internet of Things (COM-IT-CON)*, 2022.
- [26] K. Al Auafi and B. Kumar, "Security testing of Android application using Drozer," in *Proc. Int. Conf. on Computational Sciences and Sustainable Technologies*, Springer CCIS, 2024, pp. 8–18.
- [27] B. Al Barwani, E. Al Maani, and B. Kumar, "IoT-enabled smart cities: A review of security frameworks, privacy, risks, and key technologies," in *Proc. 1st Int. Conf. on Innovation in Information Technology and Business (ICIITB 2022)*, *Advances in Computer Science Research*, vol. 104, Springer, 2022, pp. 169–181.
- [28] P. Kotla, "The rise of RPA in enterprise workflows: A study on UiPath adoption trends across industries," *Communications on Applied Nonlinear Analysis*, vol. 28, no. 1, pp. 99–111, 2021.
- [29] R. Hameed, R. Palanivel, P. Kotla, L. Padma, and S. Jeyanthi, "Blockchain-integrated reputation evaluation framework for peer review," in *2025 Third International Conference on Networks, Multimedia and Information Technology (NMITCON)*, 2025.
- [30] R. K. P. Rakshitha and N. N. C., "Op-RMSprop (optimized-root mean square propagation) classification for prediction of polycystic ovary syndrome (PCOS) using hybrid machine learning technique," *International Journal of Advanced Computer Science and Applications (IJACSA)*, vol. 13, no. 6, 2022.

- [31] G. Singh, 'Role of Parents, students and other stockholders for Holistic Assessment', *International Journal of Novel Research and Development*, vol. 9, no. 1, pp. 358–363, 2024.
- [32] G. Singh, 'Innovation in Teacher Education', *BRDU International Journal of Multi-Disciplinary Research*, vol. 2, no. v, pp. 01–05, 2017.
- [33] G. Singh, 'Teacher Education and Globalization', *Jyotirmay Research Journal of Education*, vol. 4, no. 2, pp. 41–45, 2017.
- [34] G. Singh, 'Role of Emotional Intelligence for Teacher Effectiveness', *Printing Area International Research Journal*, vol. 1, no. 32
- [35] D. Antar, "The use of drama in developing the skill of speaking in Standard Arabic among third grade Arabic-speaking students," *Theory and Practice in Language Studies*, vol. 13, no. 7, pp. 1601–1613, 2023.
- [36] D. Antar, "The effectiveness of using ChatGPT-4 in creative writing in Arabic: Poetry and short story as a model," *Information Sciences Letters*, vol. 12, no. 12, pp. 2445–2459, 2023.
- [37] D. Antar, "Manifestations of color in the poetry of Arab crow poets," *Journal of the Faculty of Arts, Helwan University*, vol. 41, no. 1, pp. 7–26, 2016.
- [38] S. I. Sadigova et al., "Unveiling the dynamics of sociolinguistics, understanding language in social contexts, artificial intelligence effect," *Forum for Linguistic Studies*, vol. 7, no. 12, pp. 1–15, 2025.
- [39] N. T. Safarli et al., "Foreign language proficiency among EFL students in higher education and usage of artificial intelligence," *Forum for Linguistic Studies*, vol. 7, no. 8, pp. 646–665, 2025.
- [40] A. C. Samad et al., "Deep learning-driven smart pedagogy and assessment: A quality framework for outcome-based education in higher education," in *Proc. 2025 Global Conf. Emerging Technology (GINOTECH)*, IEEE, Apr. 2025.
- [41] N. K. Pasha et al., "The impact of AI tools on enhancing EFL learners' engagement in higher education," in *Proc. 2025 Global Conf. Emerging Technology (GINOTECH)*, IEEE, Apr. 2025.
- [42] A. Gullapelly et al., "AI-based pedagogical framework for improving engagement of EFL learners in higher education," in *Proc. 2025 Int. Conf. Intelligent Communication Networks and Computational Techniques (ICICNCT)*, Sept. 5–6, 2025, IEEE.
- [43] L. K. K. Rajendran, "From prediction to precision: An externally validated deep learning-based survival and adjuvant therapy recommendation system for resected stage III non-small cell lung cancer," *International Journal of Drug Delivery Technology (IJDDT)*, vol. 16, no. 30s, pp. 430–438, 2026.
- [44] L. K. K. Rajendran, "Evaluating the association of cancer-related risk factors with multisystem health: Insights into fertility, cardiovascular, and renal indicators," *Scientific Culture*, vol. 12, no. 4, pp. 7520–7527, 2026.
- [45] L. K. K. Rajendran, "Integrative pharmacogenomic analysis of drug response heterogeneity across cancer cell lines: Insights from large-scale GDSC data," *Scientific Culture*, vol. 12, no. 4, pp. 7537–7546, 2026.
- [46] S. Venkatasubramanian, S. Raja, V. Sumanth, J. N. Dwivedi, J. Sathiaparkavi, S. Modak, and M. L. Kejela, "Fault diagnosis using data fusion with ensemble deep learning technique in IIoT," *Mathematical Problems in Engineering*, vol. 2022, Art. no. 1682874, pp. 1–8, 2022.
- [47] S. Raja, J. Logeshwaran, S. Venkatasubramanian, M. Jayalakshmi, N. Rajeswari, N. G. Olaiya, and W. D. Mammo, "OCHSA: Designing energy-efficient lifetime-aware leisure degree adaptive routing protocol with optimal cluster head selection for 5G communication network disaster management," *Scientific Programming*, vol. 2022, Art. no. 5424356, pp. 1–11, 2022.
- [48] H. Apuri and C. Yepuri, "Design of multi-agent autonomous workflow systems using agentic AI frameworks," in *Proc. IEEE Int. Conf. Advances in Urban Computing (ICAUC)*, 2026.
- [49] H. Apuri, M. Aurangabadkar, S. Goel, M. M. R. Chinthala, and C. Yepuri, "Advancing infrastructure-as-code resilience through generative AI agents for predictive remediation and autonomous security enforcement," *Int. J. Engineering and Advanced Technology (IJEAT)*, vol. 15, no. 4, Mar. 2026.
- [50] H. Apuri et al., "Self-healing infrastructure: Autonomous LLM agents for real-time remediation of configuration drift and security misconfigurations in IaC deployments," *Int. J. Innovative Technology and Exploring Engineering (IJITEE)*, vol. 15, no. 4, Mar. 2026.

- [51] S. Venkatasubramanian, J. N. Dwivedi, S. Raja, N. Rajeswari, J. Logeshwaran, and A. Praveen Kumar, "Prediction of Alzheimer's disease using DHO-based pretrained CNN model," *Mathematical Problems in Engineering*, vol. 2023, Art. no. 1110500, pp. 1–11, 2023.
- [52] S. Venkatasubramanian, V. Mohan, A. Subasri, S. H. Prasath, A. Thenmozi, and M. A. D. Thirumanraj, "Decentralized IoT frameworks: Blockchain-enabled trust in smart ecosystems," in *Edge Computing and Applications*, N. Ramalingam, Y. El Alloui, and S. Bhattacharyya, Eds., Cham, Switzerland: Springer, 2026.
- [53] S. Venkatasubramanian, S. K. B. Pradeep Kumar CH, and M. Aurna Devi, "Optimization of IoT communication using low-power wide-area networks," in *Proc. 6th Int. Conf. Advances in Electrical, Computing, Communications and Sustainable Technologies (ICAECT)*, Bhilai, India, 2026, pp. 1–7.
- [54] S. Venkatasubramanian, "Real-time intrusion detection in IoT networks: A novel approach combining modified salp swarm feature selection and GLIRU model," in *Improving Threat Detection, Network Security, and Incident Response with AI*, Hershey, PA, USA: IGI Global, 2025, pp. 307–332.
- [55] D. Sumathi, S. Ayyappan, A. Sivasangari, B. Ramakrishna, P. Kanagaraju, and F. B. Kunwar, "Random forest with SHAP analysis for identifying environmental determinants of air quality in urban regions," *Journal of Environmental Protection and Ecology*, vol. 26, no. 8, pp. 2963–2973, 2025.
- [56] D. Sumathi, S. Ankam, P. P. Adivarekar, K. S. S. Sandeep, R. Gomathi, and R. Shobarani, "Early plant disease detection using graph isomorphic networks: Enhancing crop yield through leaf analysis," *Journal of Computer Science*, vol. 21, no. 9, pp. 2065–2073, Oct. 2025.
- [57] D. S. Wankhede and R. Selvarani, "Dynamic architecture-based deep learning approach for glioblastoma brain tumor survival prediction," *Neuroscience Informatics*, vol. 2, p. 100049, 2022.
- [58] D. S. Wankhede, "Analysis and prediction of soil nutrients (pH, N, P, K) for crop using machine learning classifier: A review," in *Innovations in Communication and Computing*. Singapore: Springer, 2022, pp. 111–121.
- [59] M. Preetha, D. S. Wankhede, R. Kumar, G. Ezhilarasan, S. Khurana, and G. S. Sahoo, "Leveraging AI-driven systems to advance data science automation," in *Proc. 1st Int. Conf. Emerging Research in Computational Science (ICERCS)*, 2023.
- [60] D. S. Wankhede, V. Gaikwad, M. Karnik, S. Kapase, and O. Bakkam, "The decentralized smart contract certificate system utilizing Ethereum blockchain technology," *Procedia Computer Science*, vol. 230, pp. 923–934, 2023.
- [61] D. S. Wankhede, C. J. Shelke, V. K. Shrivastava, R. Achary, and S. N. Mohanty, "Brain tumor detection and classification using adjusted InceptionV3, AlexNet, VGG16, VGG19 with ResNet50–152 CNN model," *EAI Endorsed Trans. Pervasive Health Technol.*, vol. 10, Art. no. 6377, 2024.
- [62] D. S. Wankhede, C. J. Shelke, and A. George, "An enhanced algorithm for predicting IDH1 mutations and 1p19q mitigation in glioma tumor," in *AIP Conf. Proc.*, vol. 3217, no. 1, Art. no. 020025, 2024.
- [63] K. Chitra, S. S. Priscila, E. S. Soji, R. Rajpriya, B. Gayathri, and A. Chitra, "Transforming electrical simulation and management with smart grid technologies," *International Journal of Engineering Systems Modelling and Simulation*, vol. 16, no. 4, pp. 241–253, 2025.
- [64] M. V. Soosaimariyan, H. L. Allasi, K. Chitra, and J. B. Gnanadurai, "Enhanced EMG-based hand gesture recognition by using generalized deep infomax networks," *Journal of Sensors*, vol. 2025, no. 1, p. 9496890, 2025.
- [65] T. P. Krishna Kumar, "Shift of entertainment media to OTT platform – The paradigm shift of youth impacting business world," *Turkish Online Journal of Qualitative Inquiry*, vol. 11, no. 2, pp. 415–421, 2020.
- [66] J. Muhamed Rafi, J. Moosa, T. P. Krishna Kumar, and K. Deepak, "Crude oil price influence on the performance of selected stocks from different sectors – An empirical analysis," *Journal of Survey in Fisheries Science*, vol. 10, Special Issue 3, pp. 1893–1902, 2023.
- [67] S. K. Saravanan, R. Krishnamoorthy, T. P. Krishna Kumar, R. Narayana Rao, D. Udaya Suriya Rajkumar, and R. Thiagarajan, "IoT alert reflexion of forbidden deforestation regions with drone observation," *IEEE Xplore*, vol. 18, no. 5, pp. 201–211, 2023.

- [68] T. P. Krishna Kumar, P. B. Acharjee, P. D. Sawant, P. Dabaria, and A. S. Mohideen, "The impact of using Facebook on consumer buying behaviour online," *Journal of Chemical Health Risks*, vol. 12, no. S4, pp. 744–752, 2023.
- [69] S. Manochandar, T. P. Krishna Kumar, P. B. Acharjee, P. D. Sawant, P. Dabaria, and A. S. Mohideen, "The impact of using Facebook on consumer buying behaviour online," *European Chemical Bulletin*, vol. 12, SI 4, pp. 744–752, 2023.
- [70] T. P. Krishna Kumar, P. Malhotra, B. Madhukumar, M. A. Raj, R. A. Isaac, and D. Balasubramanian, "Exploring the factors influencing the effectiveness of digital marketing in changing environment: A theoretical and empirical investigation," *Journal of Educational Administration: Theory and Practice*, vol. 30, no. 4, pp. 7488–7493, 2024.
- [71] T. P. Krishna Kumar, R. Suriakala, N. Shankar, and M. Deepak, "Global to local perspectives in succession planning of family business in unorganized sector," *Journal of Educational Administration: Theory and Practice*, vol. 30, no. 5, pp. 3056–3066, 2024.
- [72] T. P. Krishna Kumar, S. Ramesh, D. R. Pallavi, M. Ramachandran, V. Saravanan, and M. Selvam, "Individual and group behavior-based customer product recommendation for designing information systems using SPSS statistics," in *Springer Nature Switzerland*, Jan. 10, 2025, pp. 292–299.
- [73] S. Ramesh, T. P. Krishna Kumar, D. R. Pallavi, M. Ramachandran, K. Ramu, and S. Rajkumar, "Evidence on dividend preferences, attention, and IPO valuation of retail investors using SPSS statistics," in *Springer Nature Switzerland*, Jan. 10, 2025, pp. 651–659.
- [74] T. P. Krishna Kumar, R. Suriakala, V. Seema, K. T. Vijayamol, and B. Tater, "The impact of artificial intelligence and machine learning on personalized marketing strategies," *Journal of Chemical Health Risks*, vol. 15, no. 2, pp. 1562–1576, 2025.
- [75] M. Rana, T. P. Krishna Kumar, and P. Kapoor, "Emerging trends in sustainable marketing: Analyzing the impact of eco-friendly consumer behavior on brand strategies," *International Journal of Environmental Sciences*, vol. 11, no. 8S, pp. 207–213, 2025.
- [76] M. Rana, T. P. Krishna Kumar, and R. Suriakala, "Analyzing the impact of government policies on women entrepreneurship: A secondary data study," *International Journal of Environmental Sciences*, vol. 11, no. 8S, pp. 198–206, 2025.
- [77] T. P. Krishna Kumar, D. Nair, R. Suriakala, and A. K. Prasad, "Navigating the future: The role of AI and machine learning in financial market innovations," *Journal of Applied Bioanalysis*, vol. 11, no. 4, pp. 50–60, 2025.
- [78] T. P. Krishna Kumar, R. Suriakala, R. Somasundaram, P. S. John, and L. Thomas, "Strategic integration of social media in educational planning: Management approaches for student engagement and institutional development," *Journal of Applied Bioanalysis*, vol. 11, no. S2, pp. 128–136, 2025.
- [79] T. P. Krishna Kumar, "Business agility – An inevitable model to be the market leader in the AI & IoT enabled business environment," *Empirical Economics Letters*, vol. 21, Special Issue 1, pp. 21–26, 2022.
- [80] T. P. Krishna Kumar, R. Suriakala, M. Deepak, D. Nair, and A. Krishnaprasad, "The influence of user-generated content on brand reputation and trust," *European Economic Letters*, vol. 15, no. 2, pp. 137–147, 2025.
- [81] T. P. Krishna Kumar, R. Suriakala, A. Saravanakumar, P. S. John, and P. Kapoor, "Green supply chain management: Key challenges, emerging trends, and strategic solutions for sustainable business practices," *European Economic Letters*, vol. 15, no. 2, pp. 1143–1151, 2025.
- [82] T. P. Krishna Kumar, J. Bamin, A. Devendran, C. H. Madhavi Latha, C. H. A. K. Gubbala, and M. Manoj, "Customer engagement strategies and their impact on e-commerce loyalty," *Journal of Informatics Education and Research*, vol. 5, no. 2, pp. 4548–4557, 2025.
- [83] T. P. Krishna Kumar, R. Suriakala, J. Kularajasingam, C. N. Mini, and K. T. Vijayamol, "Urban air mobility: A comprehensive literature review on the growth of air taxis and drone delivery systems," *International Journal of Economic Practices and Theories*, vol. 2025, no. 1, pp. 147–159, 2025.

- [84] T. P. Krishna Kumar, D. Nair, C. K. Reshma, A. Krishnaprasad, and N. Shankar, "The role of leadership in enhancing healthcare quality and patient safety," *Advances in Consumer Research*, vol. 2, no. 6, pp. 598–602, 2025.
- [85] K. Lakshmi and K. Chitra, "Stress Net: Multimodal stress detection using ECG and EEG signals," *Journal of Data Science*, vol. 2024, no. 59, pp. 1–8, 2024.
- [86] S. Rishabh, K. Chitra, and C. S. Yap, "A study on non-fungible tokens marketplace for secure management," *INTI Journal*, vol. 2024, no. 18, pp. 1–8, 2024.
- [87] S. Shreyash, S. Gaur, K. Chitra, and M. Y. N. Zuhaili, "EasyLearnify – A student study portal," *INTI Journal*, vol. 2024, no. 17, pp. 1–6, 2024.
- [88] C. J. Shelke, D. S. Wankhede, P. M. Paul, V. K. Shrivastava, and R. Achary, "Enhanced prediction of glioma brain tumors using deep learning algorithm," in *AIP Conf. Proc.*, vol. 3217, no. 1, Art. no. 020022, 2024.
- [89] D. S. Wankhede, B. Karare, A. D. Warange, P. Bhokardankar, and K. S. Tidke, "Blockchain-enabled thyroid detection using voting classifier and deep convolutional neural network," in *Proc. 3rd Int. Conf. Networks and Advances in Computational Technologies (NetACT)*, 2025.
- [90] P. V. Deshmukh, A. K. Shahade, M. R. Shahade, D. S. Wankhede, and P. H. Gohatre, "Breast cancer detection using a novel hybrid machine learning approach," *Ingénierie des Systèmes d'Information*, vol. 30, no. 3, Art. no. 301, 2025.
- [91] P. V. Deshmukh, A. K. Shahade, D. S. Wankhede, M. R. Shahade, N. N. Sakhare, and P. H. Gohatre, "Optimizing NLP processes with human insight and machine intelligence," *Ingénierie des Systèmes d'Information*, vol. 30, no. 5, pp. 1339–1347, 2025.
- [92] D. Sumathi, A. Mishra, and D. K. Jha, "AI-based stress prediction: Integrating psychological and behavioral data using deep learning," in *Proc. International Conference on Innovative Computing and Communication (ICICC)*, *Lecture Notes in Networks and Systems*, vol. 1435, vol. 6, no. 1, pp. 145–158, 2025.
- [93] D. Sumathi and P. Poongodi, "Scheduling Based on Hybrid Particle Swarm Optimization with Cuckoo Search Algorithm in Cloud Environment," *IIOAB JOURNAL*, vol. 7, no. 9, pp. 358–366, 2016.
- [94] S. Nagar, "An impact of performance of companies with sustainability goal on stock market movements," *European Economic Letters*, vol. 13, no. 3, pp. 417–420, 2023.
- [95] S. Nagar and P. Mahajan, "An assessment of effectiveness of remote work mode in job internships," *The Online Journal of Distance Education and E-Learning (TOJDEL)*, vol. 11, no. 2, p. 1154, 2023.
- [96] S. Nagar, "Augmentation of insurance business in India: Role of commercial banks," in *India Banking and Finance Report 2024*, National Institute of Bank Management (NIBM), pp. 81–94, 2024.
- [97] S. Nagar, "Cointegration of Indian stock market with global stock markets: An empirical analysis," *European Economic Letters*, vol. 14, no. 2, pp. 2457–2464, 2024.
- [98] L. Jose, "Contextual Diachronic Semantic Framework: Advancing Literary Analysis and Pedagogy through the Semantic Study of Shirley Jackson's 'The Lottery'," *Educational Process: International Journal*, vol. 17, Art. no. e2025377, Aug. 14, 2025.
- [99] P. Jothilingam, "Towards autonomous commissioning: Integrating digital twins, artificial intelligence and smart sensors for next-generation process control systems," *Certified Journal of International Research (CJIR)*, vol. 5, no. 1, pp. 1–8, Mar. 2025.
- [100] P. Jothilingam, "Edge computing for industrial automation and control: Enabling real-time processing, scalable architectures and secure operations," *Certified Journal of International Research (CJIR)*, vol. 5, no. 1, pp. 1–8, Mar. 2025.
- [101] P. Jothilingam, "Advancing cybersecurity in industrial control systems: Frameworks, threat modeling, and resilience strategies," *International Journal of Supportive Research (IJSR)*, vol. 2, no. 2, pp. 69–75, Jul. 2024.
- [102] P. Jothilingam, "Cybersecurity in water and wastewater systems: Protecting critical infrastructure from emerging threats and ensuring operational resilience," in *Proc. International Conference on Recent Advances in Science, Engineering, Technology and Management, India*, Mar. 2024, pp. 550–558.

- [103] P. Jothilingam, "Digital twin technologies for ICS: Leveraging virtualization and sensor data for FAT/SAT, commissioning and predictive risk detection," *International IT Journal of Research*, vol. 1, no. 1, pp. 45–49, Oct. 2023.
- [104] O. Alimbaeva, A. Joshi, G. Saritha, L. H. Alzubaidi, K. Senthamil Selvan, and A. Chaudhary, "Novel Materials for High-Performance Energy Storage Devices," in *E3S Web of Conferences 13th International Conference on Power and Energy Systems (ICPES 2023)*, Chengdu, China, 2024.
- [105] B. Jayaprakash, D. Bordoloi, P. Mehta, A. Amudha, P. Marwaha, and K. S. Selvan, "A Network for Medical Segmentation of Images with Multiple Centers That Preserves Privacy," in *Proceedings of the 2024 Global Conference on Communications and Information Technologies (GCCIT 2024)*, Bangalore, India, 2024.
- [106] M. Vigenesh, M. Grover, K. Senthamilselvan, A. Singla, M. Chethan, and S. B. Patil, "Secure Data Aggregation in Wireless Sensor Ad Hoc Networks Using Homomorphic Encryption," in *Proceedings of the 15th International Conference on Computing, Communication and Networking Technologies (ICCCNT 2024)*, Himachal Pradesh, India, 2024.
- [107] K. S. Selvan, S. Goyal, O. S. Kulkarni, K. Yuvaraj, and N. Vashisht, "Generative Adversarial Networks for 3D Scene Reconstruction," in *Proceedings of the 15th International Conference on Computing, Communication and Networking Technologies (ICCCNT 2024)*, Himachal Pradesh, India, 2024.
- [108] K. Senthamil Selvan, G. Aravind, C. Pavankumar, K. Bhopate, M. Ravshan, and T. S. Senthil Kumar, "Varicose Veins Treatment Using Automated Stockings," in *Proceedings of the International Conference on Newer Engineering Concepts and Technology (ICONNECT 2023)*, Tiruchirappalli, India, 2023.
- [109] M. Almusawi, A. P. Singh, Y. S. Bisht, K. Senthamil Selvan, J. D., and N. Esanmurodova, "Cryptography-Based Privacy-Preserving Data Analysis and Empowering Data Privacy through Secure Multi-Party Computation: Challenges and Solutions," in *Proceedings of the 2023 International Conference for Technological Engineering and its Applications in Sustainable Development (ICTEASD 2023)*, Al-Najaf, Iraq, 2023.
- [110] A. S. Priya, K. S. Selvan, P. Jeevananthan, D. Dhabliya, P. K. Parida and S. Pund, "An Analysis of Partition Tree Clustering Techniques for Automated Classification of Hyper Spectral Scans," *2023 International Conference on Power Energy, Environment & Intelligent Control (PEEIC)*, Greater Noida, India, 2023.
- [111] G. Ahluwalia, S. K, D. Dhabliya, M. K. Singar, G. Ezhilarasan and V. Singh, "Assessing the Benefits of Data Mining for Predictive Analytics," *2023 International Conference on Emerging Research in Computational Science (ICERCS)*, Coimbatore, India, 2023.
- [112] I. Nayak, G. Radha, R. M. M. Shareef, T. E, K. Senthamilselvan and J. V, "Enhancing Student Performance through Adaptive Knowledge Assessment: A Bayesian Optimization Approach," *2023 International Conference on Sustainable Communication Networks and Application (ICSCNA)*, Theni, India, 2023.
- [113] M. C. Jobin Christ, D. Kalaiyarasi, J. G, K. Senthamilselvan, D. Kirubakaran and N. S. Gowri Ganesh, "PoBTx(Proof of Block and Transaction): An Efficient Consensus Algorithm for IoT Business Blockchain," *2023 Second International Conference on Augmented Intelligence and Sustainable Systems (ICAISS)*, Trichy, India, 2023.
- [114] J. Cao, G. Bhuvaneshwari, T. Arumugam, and A. B. R, "The digital edge: Examining the relationship between digital competency and language learning outcomes," *Frontiers in Psychology*, vol. 14, Jun. 2023.
- [115] J. Rehman, M. Kashif, and T. Arumugam, "From the land of Gama: Event attachment scale (EAS) development exploring fans' attachment and their intentions to spectate at traditional gaming events," *International Journal of Event and Festival Management*, vol. 14, no. 3, pp. 363–379, Jun. 2023.
- [116] K. U. Kiran and T. Arumugam, "Role of programmatic advertising on effective digital promotion strategy: A conceptual framework," *Journal of Physics: Conference Series*, vol. 1716, p. 012032, Dec. 2020.
- [117] M. A. Sanjeev, A. Thangaraja, and P. K. S. Kumar, "Multidimensional scale of perceived social support: Validity and reliability in the Indian context," *International Journal of Management Practice*, vol. 14, no. 4, p. 472, 2021.
- [118] M. A. Sanjeev, S. Khademizadeh, T. Arumugam, and D. K. Tripathi, "Generation Z and intention to use the digital library: Does personality matter?," *The Electronic Library*, vol. 40, no. 1/2, pp. 18–37, Dec. 2021.

- [119] S. Gupta, N. Pande, T. Arumugam, and M. A. Sanjeev, "Reputational impact of COVID-19 pandemic management on World Health Organization among Indian public health professionals," *Journal of Public Affairs*, Oct. 2022.
- [120] S. Hameed, S. Madhavan, and T. Arumugam, "Is consumer behaviour varying towards low and high involvement products even sports celebrity endorsed?," *International Journal of Scientific & Technology Research*, vol. 9, no. 3, Mar. 2020. [Online]. Available: <https://www.ijstr.org/final-print/mar2020/Is-Consumer-Behaviour-Varying-Towards-Low-And-High-Involvement-Products-Even-Sports-Celebrity-Endorsed.pdf>
- [121] S. Verma, N. Garg, and T. Arumugam, "Being ethically resilient during COVID-19: A cross-sectional study of Indian supply chain companies," *The International Journal of Logistics Management*, Aug. 2022.
- [122] T. Arumugam, B. L. Lavanya, V. Karthik, K. Velusamy, U. K. Kommuri, and D. Panneerselvam, "Portraying women in advertisements: An analogy between past and present," *The American Journal of Economics and Sociology*, vol. 81, no. 1, pp. 207–223, Jan. 2022.
- [123] T. Arumugam, B. Subramaniam, B. Jayakrishnan, V. Asi, M. Reddy, and Ranganathan, "Financial reengineering perspectives of Government of India with respect to time series effect and performance of sovereign gold bond," Accessed: Aug. 06, 2024. [Online]. Available: <https://www.ijstr.org/final-print/mar2020/Financial-Reengineering-Perspectives-Of-Government-Of-India-With-Respect-To-Time-Series-Effect-And-Performance-Of-Sovereign-Gold-Bond.pdf>
- [124] T. Arumugam, K. M. Ashifa, V. Vinayagalakshmi, U. Kiran, and S. Ramya, "Big Data in Driving Greener Social Welfare and Sustainable Environmental Management," *Advances in Business Information Systems and Analytics Book Series*, pp. 328–343, Dec. 2023.
- [125] T. Arumugam, M. A. Sanjeev, R. K. Mathai, S. R. Boselin Prabhu, R. Balamourougane, and T. Jarin, "An empirical verification of the proposed distributor marketing intelligence system model," *International Journal of Business Information Systems*, vol. 45, no. 4, pp. 454–473, Jan. 2024.
- [126] T. Arumugam, R. Arun, R. Anitha, P. L. Swerna, R. Aruna, and V. Kadiresan, "Advancing and methodizing artificial intelligence (AI) and socially responsible efforts in real estate marketing," *Advances in Business Information Systems and Analytics Book Series*, pp. 48–59, Dec. 2023.
- [127] T. Arumugam, R. Arun, S. Natarajan, K. K. Thoti, P. Shanthy, and U. K. Kommuri, "Unlocking the Power of Artificial Intelligence and Machine Learning in Transforming Marketing as We Know It," *Advances in Business Information Systems and Analytics Book Series*, pp. 60–74, Dec. 2023.
- [128] T. Arumugam, R. Mathai, K. Balasubramanian, Renuga K., M. Rafiq, and V. Kalyani, "The mediating effect of customer intimacy on electronic word of mouth (eWOM) in social networking sites on buying intention," *Zenodo (CERN European Organization for Nuclear Research)*, Sep. 2021.
- [129] S. N. Prasad, K. Senthamil Selvan, B. L. Dhevi, and A. N. Kumar, "Computation on scheduling attacks and optimal resource utilisation in wireless sensor networks via optimisation techniques," *International Journal of Internet Protocol Technology*, vol. 16, no. 3, pp. 131–137, 2023.
- [130] S. Narasimha Prasad, K. Senthamil Selvan, and B. L. Dhevi, "Intrusion Detection System in Wireless Sensor Networks and Fair Resource Allocation Using Geometric Deep Learning Techniques," *Wirel. Pers. Commun.*, vol. 123, no. 4, pp. 3401–3412, 2022.
- [131] G. K. Kamalam, S. Joshi, M. Maheshwari, K. Senthamil Selvan, S. S. Jamal, S. Vairaprakash, and M. Alhassan, "Augmented Reality-Centered Position Navigation for Wearable Devices with Machine Learning Techniques," *J. Healthcare Eng.*, vol. 2022, no. 1, pp. 1–10, 2022.
- [132] R. Dhaya, U. U. J. Ujwal, T. Sharma, P. Singh, R. Kanthavel, K. Senthamil Selvan, and D. Krah, "Energy-Efficient Resource Allocation and Migration in Private Cloud Data Centre," *Wirel. Commun. Mobile Comput.*, vol. 2022, no. 1, pp. 1–13, 2022.
- [133] K. V. N. Kavitha, S. Ashok, A. L. Imoize, S. Ojo, K. Senthamil Selvan, T. A. Ahanger, and M. Alhassan, "On the Use of Wavelet Domain and Machine Learning for the Analysis of Epileptic Seizure Detection from EEG Signals," *J. Healthcare Eng.*, vol. 2022, no. 1, pp. 1–11, 2022.
- [134] B. Lakshmi Dhevi, K. Vishvakshenan, K. Senthamil Selvan, and A. Rajalakshmi, "Patient Monitoring System Using Cognitive Internet of Things," *Journal of Medical Systems*, vol. 42, no. 11, pp. 1–9, 2018.

- 
- [135] K. Senthamil Selvan and B. L. Dhevi, "Telemedicine Consultation Using ARM for Monitoring Vital Signs of Heart Patients at Home," *J. Pure Appl. Microbiol.*, vol. 9, no. 8, pp. 135–138, 2015.
- [136] I. Ganie and S. Jagannathan, "Online continual safe reinforcement learning–based optimal control of mobile robot formations," *Proc. 2024 IEEE Conf. Control Technol. Appl. (CCTA)*, Newcastle upon Tyne, U.K., 2024, pp. 519–524.
- [137] I. Ganie and S. Jagannathan, "Online learning-driven human intent estimation and control for human–robot interaction," *Proc. 2025 Amer. Control Conf. (ACC)*, Denver, CO, USA, 2025, pp. 5160–5165.
- [138] I. Ganie and S. Jagannathan, "Online lifelong optimal tracking control of nonlinear continuous-time strict-feedback systems using deep neural networks," *Neural Netw.*, vol. 191, 107793, 2025.
- [139] I. Ganie and S. Jagannathan, "Optimal trajectory tracking of uncertain nonlinear continuous-time strict-feedback systems with dynamic constraints," *Int. J. Control*, pp. 1–15, 2024.
- [140] J. R. Rogers, Y. Wang, N. F. Khan, K. Mott, V. K. Nomula, D. Wang, P. C. Fiduccia, M. Burcu, and X. Liu, "Landscape assessment of clone-censor-weight methodology application in real-world data studies: A scoping review," in *Proceedings of the Pharmacoepidemiology and Drug Safety Conference*, vol. 33, pp. 424–424, Nov. 1, 2024.