Journal of Global Research in Electronics and Communication
Volume 2, No. 2, February 2026
Available Online at: www.jgrec.info
REVIEW PAPER

The Role of Artificial Intelligence in Automating SaaS Operations: A Systematic Review of Current Techniques

Anoop Sunarthy
Assistant Professor
Department of Computer Science and Application
Mandsaur University
Mandsaur, India
Sunarthy7@gmail.com

***Abstract*—Software as a Service (SaaS) is a fast-paced technology that has revolutionized how applications are accessed, deployed and scaled in an organization and Artificial Intelligence (AI) has been among the technological tools necessary to enable automation in the field. This met-analysis also focuses on the ways in which machine learning, natural language processing and intelligent process automation AI techniques could be integrated into the work of SaaS in order to enhance their performance, security and scaling. The presented paper recapitulates the modern development in regard with automating software-as-a-service (SaaS) operations with referring to frameworks, tools, and means of ensuring that compliance, monitoring, and delivery are made simpler. The report identifies key automation solutions, like process management, AI-driven monitoring, and policy-based governance using peer-reviewed literature. The incorporation of explainable AI to help in decision-making, predictive analytics to act proactively to solve problems, and security automation to maintain compliance are all emerging issues that the research explores. The paper concludes with a set of suggestions about what research should be done next, particularly focusing on intelligent automation models that are flexible, sustainable, and building blocks that can evolve alongside organizations. In summary, have determined that automation is essential to the SaaS long-term sustainability of SaaS operations, but not only a technical enhancement.**

Keywords*—Cloud Computing, Software as a Service (SaaS) Automation, SaaS Automation, Artificial Intelligence (AI), Security, Reliability.

I. INTRODUCTION

The emergence of cloud computing has radically changed the way software applications are delivered, deployed, and managed, enabling organizations to utilize resources via the internet without specific hardware. Software as a Service (SaaS) has become one of the most used models of cloud service providers, providing subscription-based access to centrally hosted and managed applications. SaaS enables business to have flexibility, scalability and low cost enabling them to concentrate on actual business operations and not in the management of infrastructure [1]. This fast rate of adoption of SaaS is indicated by the fact that its market is projected to experience a significant rise to reach 176.62 billion by the year 2025, thus it is very important in contemporary online businesses [2]. SaaS applications find plenty of applications in all industries to streamline operations in their supply chain management, finance, human resources, and customer relationship management. Even though the SaaS platforms have benefits, their complexity has posed major challenges in operations. The control of activities like software testing, performance monitoring, resource allocation and security is increasingly becoming challenging especially in large scale dynamic cloud environments. Manual techniques are long, prone to errors and not able to support the needs of high availability, real time systems. The issue of security is especially problematic because of the reliance on the services of third parties, as well as the storage of a significant volume of sensitive data, which complicates the threat of privacy invasion and cyber-attacks [3].

To address those, Artificial Intelligence (AI) has emerged as a prime illustration of one of the primary enablers of automation and optimization of SaaS processes. The process of automating key tasks in the operation is also achieved by machine learning (ML), natural language processing (NLP) and predictive analytics, such as anomaly detection [4], test case generation, real-time performance monitoring and intelligent resource management [5], [6]. The entire lifecycle of optimizing resources, analyzing data, to model generation and refresh are less dependent on manual input and more efficient and reliable in terms of system performance with the help of artificial intelligence (AI) applications such as Turbonomic. In addition to operational efficiency, AI can boost the security of SaaS, as it actively weakens the vulnerabilities and prevents possible risks. Additionally, AI application is not only embraced in other related areas (like education) but also in SaaS-based applications, AI can be applied to enhance individualized learning, engagement, and develop skills in critical thinking [7]. As the use of AI to support increasingly complex SaaS systems is growing, it is vital to conduct a systematic review of existing AI methods to identify best practices, emerging trends, and research gaps. The given paper takes an in-depth look at AI-based automation in SaaS services and provides an overview of the methods, uses, and prospects of the smart use of software in cloud-based environments.

Due to the increasing reliance of enterprises on cloud-based services, the automation of SaaS operations can be used to minimise the amount of manual overhead, enhance productivity and ensure scalability. The traditional SaaS platform administration is known to result in incompatible workflows, higher costs and human error. Automation enables companies to enhance security and reliability, and efficiency in the provisioning, monitoring, and compliance. This enables

the SaaS ecosystems to be stronger and more adaptable, which consequently enables faster innovation and liberates the IT professionals to focus on high-level initiatives as opposed to monotonous tasks.

A. *Structured of the paper*

This paper is as follows: Section II outlines SaaS operations, Section III explains AI-based resource allocation, Section IV discusses SaaS security issues, Section V reviews current security solutions, Section VI presents related literature, Section VII concludes and suggests future work.

II. Overview of SaaS Operations

A cloud-based software delivery and licensing paradigm known as Software as a Service (SaaS) involves the supplier hosting and enabling end users to access the program using a web interface, and maintaining it on the cloud. Software delivery, deployment refer to the process of making the software available to users, resulting in A client-side application that is ready to use [8]. The procedures that take place between purchasing and executing software can also be referred to as software deployment.

Fig. 1. SaaS diagram in Cloud Computing.

Software as a Service, or SaaS, is a business idea that entails hosting software applications in the cloud and making them available through a variety of devices, such as networks, PCs, and mobile phones (see Fig. 1). It connects core components, such as app servers, databases, and code — enabling seamless software delivery and use over the internet. SaaS has improved the operations with efficiencies through automation and valuable data analytics and better collaboration, here is how it works:

A. *Automation and Smoothing*

Most SaaS solutions usually have inbuilt automation which makes business processes easier and faster. Other solutions can automate repetitive work involving data entry, report generation, customer communication, and even workflows across departments. For example, a SaaS marketing platform can send follow-up emails automatically on predetermined actions or set leads with set triggers. In this respect, it prevents the manual work, labour of the employees, and reduces mistakes and makes the operations consistent. These SaaS applications include Zapier which consists of many applications to automate cross-application processes. This is one of the things of further streamlined operations.

B. *Enhanced Collaboration*

The SaaS usually offers real time collaboration tools to the users in order to improve the efficiency and productivity of cooperation. SaaS solutions support free flow of cooperation between teams, who may be geographically apart, owing to its cloud-based approach. Messaging and shared document editing among other tools of project management are used in real-time and thus allow the team members to work together on a particular task and share updates in real time. This in effect reduce the communication barrier since all team members able to access the same information and use tools on real-time.

C. *Data Analytics*

Several SaaS solutions today include business intelligence solutions which enable companies to gather, analyze and respond to data in real-time. Analytics solutions have the potential to assist business to follow up the performance, to monitor key indicators and understand the behavior of the customer and the sales patterns along with operational efficiency. Dashboards and reporting make it more possible to base decisions on the data with the help of the intuitive visualization so that the manager could optimize strategies and operations in relation to them.

III. AI Technique for Resource Allocation in SaaS

The advent of artificial intelligence (AI) opens up new opportunities to address some of the enduring issues in software engineering [9]. The ability of AI to identify patterns, predict results, and automated work makes it particularly prominent in software development [10], [11]. Computing resources of Software-as-a-Service (SaaS) platforms. The allocation of resources is also a critical issue because effective network distribution is directly affecting the cost, scalability, and performance, storage. Due to the dynamics and elasticity of SaaS workloads, methods of traditional allocation are not always applicable. Automation and optimization of resource allocation are increasingly carried out using AI techniques, most of them built around ML and optimization algorithms, as illustrated in Fig. 2 technique of resource allocation in SaaS.

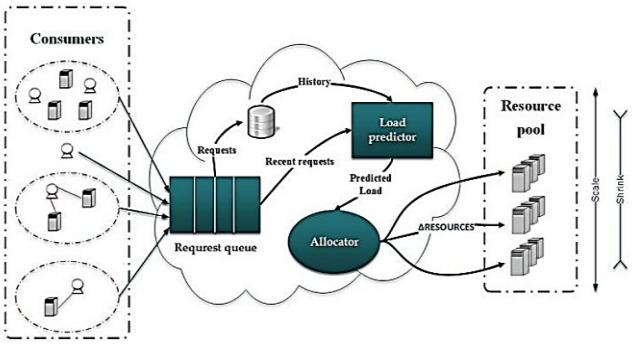

Fig. 2. AI technique for resource allocation in SaaS [12].

A. *Machine Learning Approach*

Machine learning enables machines to compute and process data in a superior way. In the majority of cases, human beings can hardly identify patterns or draw conclusions on complex data [13]. Machine learning (ML) can be used to solve this problem since systems can learn based on the data and slowly become more useful without programming. A considerable amount of research has gone into developing algorithms that help machines learn autonomously and make intelligent decisions.

B. *Reinforcement Learning*

The reinforcement learning or RL is an effective AI method of tackling an evolving and complex situation, such as

SaaS. Resource consumption in these environments changes due to infrastructure changes, changes in application load, and changes in user behaviour. Whereas the conventional rule-based or fixed methods cannot adapt adequately to these alterations, reinforcement learning (RL) provides a self-learning model, which allows optimum decisions in real-time via dynamic interaction with the system.

C. Deep Learning for Complex Pattern Recognition

SaaS platforms are highly dynamic systems having complex usage patterns, which makes it difficult to model and control resource demand in the traditional way. DL has become an effective means of discovering complex patterns and long-term correlations in the multidimensional data and long time series, and thus it can be used especially effectively in predictive resource allocation and cost optimization of SaaS systems.

D. SaaS Applications Characateristics

SAAS Application is characterized by the following parameters. As a user-friendly and advanced SAAS application, AI Tools is bound to contribute immensely to the overlap of AI and software implementation [14].

1) Modularity and Extensibility

AI Tools has a modular architecture, which allows the easy incorporation of a variety of AI tools. This modularity does not only provide scalability, but also enables the addition of new AI capabilities easily in line with the changing user demands and technology.

2) User-Centric Design

It is built based on the user-centric design philosophy, which reflects in the user interface created with Next.js and React. The tailwind is used to increase aesthetic appeal and user experience, creating user-friendly and visually-friendly environment to the users of different fields, including developers and multimedia creators.

3) AI Algorithmic precision

The advanced AI algorithms support each AI module, including the code generation, music composition, and audio-video synthesis. It is concerned with precision where the outputs generated are of high standards of accuracy and quality [15]. This attribute makes AI Tools a trustworthy application to the user that wants to rely on AI-based solutions.

4) Seamless Financial Transactions with Stripe

The adoption of Stripe to conduct payment transactions is an indicator that it is devoted to the convenience of the users and financial transparency. It is easy to subscribe to services and the whole process of payment is secure and easy user-friendly which increases the overall SAAS experience.

E. AI contributes to SaaS future

Natural language processing (NLP), a technology that automatically analyzes speech patterns and voice instructions, makes software easier to use [1]. This might be used to all customer care features to improve personalization and better satisfy customer needs.

- Develop software that can learn from every activity or interaction to become more intelligent and productive.
- Develop a deeper understanding of contextual data and insights that might provide with a real competitive edge.
- Improve internal collaboration and operations using more sophisticated communication techniques.
- On a very commercial level, Waymo's self-driving vehicles and Netflix's customized content suggestions are examples of ML in SaaS-type models that analyze potential risk factors or trip delays over time. As 2021 draws near, these advancements prove to be the tip of the automation iceberg.

IV. Security Issues in SaaS

A cloud deployment model known as Software as a Service (SaaS) provides on-demand application services, such as business applications like ERP, SCM, and CRM, as well as conferencing applications [16], [17]. The SaaS model depends on the cloud service provider to protect the client. Because customer data is stored on the vendor's or provider's end, SaaS presents a number of security and trust issues. SaaS is undeniably the greatest cloud service paradigm and the industry with the highest demand for security controls and oversight for the foreseeable future. Fig. 3 illustrates the most prevalent security problems that SaaS model consumers encounter.

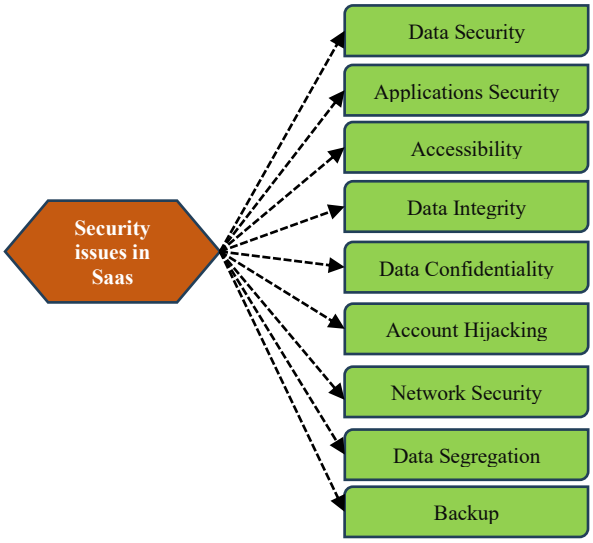

Fig. 3. Security Issues in SaaS Model [18].

A. Data Security

Data security is the main challenge for any cloud approach. In order to ensure the security of their data, SaaS clients must depend on the security measures that their cloud service providers offer. The SaaS service model protects sensitive data stored in the provider's data centres by using firewalls [19]. Furthermore, these businesses need to bolster security against employee or malicious software-caused data breaches. The cloud service provider is responsible for ensuring a secure cloud environment.

B. Application Security

Web browsers are mostly used to deliver cloud applications [20]. Hackers frequently target users' computers via the internet in order to carry out nefarious tasks like stealing personal data. Web application security flaws might make SaaS applications susceptible.

C. Accessibility

Software as a Service's ability to be accessed via desktops and mobile devices from any location with internet

availability is one of its main advantages. Although it makes the user's life more convenient, there is a significant danger involved [21], [22]. The Cloud Security Alliance (CSA) has released studies on the dangers of mobile computing, such as operating system flaws, insecure networks, proximity-based hacking, and malicious software that may steal data.

D. Data Integrity

Data integrity ensures that data is unaltered and that only authorized individuals may access and change it. "A level to which a collection of data is complete, consistent, and accurate" is how it is described. By making sure data satisfies the ALCOA principle (Attribute, legible, contemporaneous, original, and accurate), data integrity may be attained.

E. Data Confidentiality

Preventing the purposeful or inadvertent leaking of information is known as data confidentiality. The cloud storage environment includes traffic analysis, encryption, capture, covert channels, and websites pertaining to intellectual property rights [23]. Cloud computing involves sharing or storing data on remote servers that are owned or used by others while utilizing the Internet or other connections. Privacy and secrecy are essential whenever a person, business, government agency, or other organization transfers data to the cloud.

F. Account Hijacking

There is a chance that hackers employ harmful and illegal actions to take control of or steal users' accounts. They may modify user data, give misleading information, or do this for their own benefit. Because anybody may sign up to utilize SaaS, there is a very high risk of an account being stolen.

G. Network Security

In the SaaS cloud model, the SaaS application allows organizations to access the sensitive data that is held at the SaaS provider's end [24]. Since the network allows access to this sensitive data, to avoid data leaks, the network's data flow must be encrypted.

H. Data Segregation

Multi-tenancy allows several customers to use the SaaS provider's services to preserve their data. In these cases, the data of several users is kept in one place. This makes it possible for someone else to access someone else's private data. One method to get around it is to inject client code. Therefore, each user's data should have a clear limitation under a SaaS model. This constraint needs to be guaranteed both at the application and physical levels.

I. Backup

The traditional backup techniques are not the best for cloud apps, although they were employed for data centers and programs that were mainly made for consumer and online applications. Additionally, strong encryption must be used while storing backup data to avoid unexpected sensitive data breaches.

V. Current Security Solutions

There are a lot of studies and experiments being conducted all around us about cloud computing security. Numerous companies are creating a number of cloud security apps and security guidelines. Among these, Individuals and solution providers are gathering at the Cloud Security Alliance (CSA) to discuss current and future best practices for data assurance in cloud systems. The mission of the non-profit CSA is to encourage the application of best practices for cloud security assurance. Creating a development framework with a strict security architecture is the best and most straightforward security option for SaaS application.

Applying cryptography to data that renders it completely worthless can prevent access by other users, while standard encryption can make availability more difficult. It is advised that users confirm that the data is stored on backup drives, and before transferring the data to the cloud, the file keywords are left unchanged. The RSA method and digital signatures might be used to secure the data. According to some, RSA is the most well-known cryptographic technique that can safeguard data in cloud environments. Resource isolation, or separating the processor caches in virtual machines from the hypervisor cache, is another method for protecting data while it is being processed. A list of recommended practices for identification and secure access management may be found in the identification and Access Management Guidance report published by CSA.

A. Benefits of SaaS model in cloud computing

The advantages of the SaaS model in cloud computing have been categorized in a number of ways [25], [26], including:

- The persistent use of viruses to explain updates that weren't reliant on consumer compliance.
- The increased level of safety knowledge that is often available within an organization.
- The quicker supplying of consumers.
- It differs from traditional software, which is often sold on a contribution basis that covers maintenance, upgrades, and some kind of user support. Typically, it function on a monthly contribution basis.
- A web browser and internet access are required, and they are ready to.
- The SAAS model street trader was in charge of the underlying IT infrastructure.
- It is possible to ensure that the most recent software always be available at all times.

VI. Literature Review

In this Section, the current developments in the field of SaaS operations exhaustively reviewed in terms of AI incorporation, maturity of application development, automation, and advanced decision-making. The use of transfer learning, Generative AI, and Artificial Intelligence are mentioned in the literature.

Wu and Pambudi (2025) explores the Fintech digital transformed, the application model and SaaS model with a specific consideration of the improvement of security. The study provides the value of pricing information by the various market conditions and rivalry between the old and new vendors. It exposes a dynamic and security minded stage in which a new vendor dynamically adjust price to appeal to demand and the original vendor devise strategies to remain competitive [27].

Aleem et al. (2024) the suggested SaaS maturity model evaluates how companies are presently developing SaaS. The performance scale, rating system, and evaluation questionnaire that make up the model's structure are all modified variants of the BOOTSTRAP algorithm. To conduct

the maturity level, this research considers four variables, which include design, architecture, business performance, and the entire SaaS organization. Consequently, this piece of work generates a comprehensive and combined method of assessing the maturity of SaaS application development [28].

Arora et al. (2024) this review deals with the use of BI, AI, and BDA in SaaS products. It explains big data analytics and enumerates its key components and discusses its relationship with business intelligence. The review explores trends in AI developments in BI, some of the most successful applications by industry, proposes a Big Data Analytics Service-Oriented architecture (BASOA) and discusses the adoption of SaaS in BI. Other avenues of future research include the AI frames, how to optimise scalability and performance of business intelligence applications created on SaaS platforms [29].

Liu et al. (2023) suggests using the SaaS (Software as a Service) architecture as the foundation for a "building block" type digital logic system. The study explores the challenges of sketching and modelling digital logic circuits in a "building block" fashion, looks at the visual recognition method of logic devices based on SVG (Scalable Vector Graphics) technology, and offers recursive and iterative algorithms for tree-based logic simulation [30].

Shang et al. (2023) aims to choose the best SaaS ERP service provider for businesses and does an empirical analysis of the variables that influence Enterprise factors and SaaS ERP service provider factors are the two criteria used to identify SaaS ERP service providers. The influencing factors are determined as follows: SaaS ERP service provider strength, enterprise operation capability, SaaS ERP service platform configuration, and enterprise compatibility [31].

Zhiwei et al. (2022) aanalyze the SaaS-based solution for IT automation, management, and upkeep. The software application architecture of the SaaS model and related technologies are introduced, and the IT administration and maintenance system's features are developed. From the perspective of the company's actual operation and maintenance, the platform system architecture, the design and implementation of the system operation, the business process of the IT automatic operation and maintenance system in the actual application, and the successful startup, implementation, and monitoring of services are all analyzed [32].

A. Research gap

Although there have been tremendous improvements in SaaS operations, there are still a number of research gaps. The existing literature is rather biased, covering one or another of the isolated issues, namely, the SaaS maturity evaluation, AI in business intelligence, ERP vendor selection, or IT automation, but not a comprehensive framework that would consider operational efficiency, security, scalability, and intelligent decision-making simultaneously. Furthermore, even though AI and automation have been implemented in the context of SaaS, they have conducted little research on the application of emerging methods to dynamic pricing, resource optimization, and adaptive system performance, including Generative AI, transfer learning, and predictive analytics. The difficulty of deploying multi-dimensional metrics, real-time monitoring of performance, and intelligent automation in various SaaS is under-researched. The literature has identified the major areas of focus, benefits, limitations, and future directions, which are summarized in Table I and reveal gaps in the literature that require additional research to create holistic, AI-enabled frameworks that could improve the operational maturity, security, and flexibility of SaaS and provide practical information to the vendors and enterprises.

TABLE I. SUMMARY OF LITERATURE STUDY OF AUTOMATING SAAS OPERATIONS TECHNIQUES

Reference	Focus Area	Advantages	Challenges	Future Work
Wu & Pambudi, 2025	Fintech SaaS & Digital Transformation	Provides insights on dynamic pricing strategies; emphasizes security-conscious SaaS adoption	Competitive market pressures; balancing pricing between new and existing vendors	Explore adaptive pricing models with AI-driven demand prediction
Aleem et al., 2024	SaaS Development Maturity	Comprehensive maturity evaluation across design, architecture, business, and organizational dimensions	Complexity of integrating diverse evaluation metrics; subjective assessment in questionnaires	Refine maturity model using real-time SaaS performance data and AI-based scoring
Arora et al., 2024	AI, BI, Big Data in SaaS	Optimizes scalability and performance of BI applications; introduces BASOA architecture	Integration of AI frameworks with existing BI tools; managing large-scale data efficiently	Develop AI frameworks tailored for sector-specific SaaS BI applications
Liu et al., 2023	SaaS-based Digital Logic Systems	Enables modular “building block” digital logic simulation; uses SVG-based recognition	Complexity in tree-based simulation; challenges in visual logic representation	Enhance automation in circuit design; explore AI-assisted logic verification
Shang et al., 2023	SaaS ERP Selection	Provides empirical guidance for selecting ERP providers; considers enterprise and provider factors	Multi-dimensional selection complexity; balancing provider capabilities and enterprise needs	Integrate AI for predictive ERP provider evaluation and compatibility scoring
Zhiwei et al., 2022	IT Automation & Maintenance	Improves IT operations efficiency; automated monitoring and service management	Implementation complexity; adapting SaaS architecture to existing IT workflows	Explore AI-driven predictive maintenance and intelligent automation in SaaS IT operations

VII. CONCLUSION AND FUTURE WORK

The adoption of Artificial Intelligence in SaaS applications has greatly altered the face of cloud-based applications, allowing more intelligent, automated, responsive systems to be added, cross-disciplinary designs that fuse AI, human-centered design, and cybersecurity are essential in developing more adaptive, secure, and scalable SaaS systems to address the needs of changing digital infrastructures. The review has shown the usage of AI-powered tools to improve the most important areas of operation, including anomaly detection, predictive maintenance, workflow optimization, and dynamic resource scaling. The innovations are not only maximizing the performance but also have a strategic advantage in the highly competitive digital space. However, the growing complexity of AI systems is introducing new challenges in terms of data security, system visibility, and cross-heterogeneous systems integration. As far as future is concerned, hopefully future research will be able to address the problems that are presently complicating the use of AI in SaaS by developing interpretable and morally amicable AI

models. The focus should be on better transparency of AI, adherence to the privacy rules, and increased trust among the user base. More in-depth research into sophisticated AI methods such as reinforcement learning, generative AI, and federated learning would uncover new opportunities for autonomous SaaS operations.

REFERENCES

[1] M. Gupta, D. Gupta, and P. Rai, "Exploring the Impact of Software as a Service (SaaS) on Human Life," *EAI Endorsed Trans. Internet Things*, vol. 10, Jan. 2024, doi: 10.4108/eetiot.4821.

[2] M. K. H. Taha, "Revolutionizing Business Operations: The Power of SaaS and Artifcial Intelligence," *Bus. Technol. Innov.*, 2024, doi: 10.13140/RG.2.2.19883.04643.

[3] M. Humayun, M. Niazi, M. F. Almufareh, N. Z. Jhanjhi, S. Mahmood, and M. Alshayeb, "Software-as-a-Service Security Challenges and Best Practices: A Multivocal Literature Review," *Appl. Sci.*, vol. 12, no. 8, p. 3953, Apr. 2022, doi: 10.3390/app12083953.

[4] V. Thangaraju, "Enhancing Web Application Performance and Security Using AI-Driven Anomaly Detection and Optimization Techniques," *Int. Res. J. Innov. Eng. Technol.*, vol. 9, no. 3, p. 8, 2025.

[5] R. Bishukarma, "The Role of AI in Automated Testing and Monitoring in SaaS Environments," *Int. J. Res. Anal. Rev.*, vol. 8, no. 2, pp. 846–852, 2021.

[6] C. Seo, D. Yoo, and Y. Lee, "Empowering Sustainable Industrial and Service Systems through AI-Enhanced Cloud Resource Optimization," *Sustainability*, vol. 16, no. 12, p. 5095, Jun. 2024, doi: 10.3390/su16125095.

[7] T. H. I. Alam and I. S. Windiarti, "The Future of Artificial Intelligence in Interactive Learning: Trends, Challenges, Opportunities," in *The 8th Mechanical Engineering, Science and Technology International Conference*, Basel Switzerland: MDPI, Apr. 2025, p. 87. doi: 10.3390/engproc2025084087.

[8] V. Shah, "Securing the Cloud of Things: A Comprehensive Analytics of Architecture, Use Cases, and Privacy Risks," *ESP J. Eng. Technol. Adv.*, vol. 3, no. 4, pp. 158–165, 2023, doi: 10.56472/25832646/JETA-V3I8P118.

[9] S. Garg, "AI/ML Driven Proactive Performance Monitoring, Resource Allocation and Effective Cost Management in SAAS Operations," *Int. J. Core Eng. Manag.*, vol. 6, no. 6, pp. 263–273, 2019.

[10] M. Alenezi and M. Akour, "AI-Driven Innovations in Software Engineering: A Review of Current Practices and Future Directions," *Appl. Sci.*, vol. 15, no. 3, p. 1344, Jan. 2025, doi: 10.3390/app15031344.

[11] R. Dattangire, R. Vaidya, D. Biradar, and A. Joon, "Exploring the Tangible Impact of Artificial Intelligence and Machine Learning: Bridging the Gap between Hype and Reality," in *2024 1st International Conference on Advanced Computing and Emerging Technologies (ACET)*, IEEE, Aug. 2024, pp. 1–6. doi: 10.1109/ACET61898.2024.10730334.

[12] C. K. Patel, "A Comprehensive Survey on AI-Driven Resource Allocation and Cost Optimization Techniques in SAAS Platforms," *J. Glob. Res. Math. Arch.*, vol. 12, no. 8, 2025.

[13] N. Prajapati, "The Role of Machine Learning in Big Data Analytics: Tools, Techniques, and Applications," *ESP J. Eng. Technol. Adv.*, vol. 5, no. 2, pp. 16–22, 2025, doi: 10.56472/25832646/JETA-V5I2P103.

[14] A. Jadhav, A. Gaikwad, M. Gavali, and P. Gurav, "SaaS Applications: AI Tools," *IJCRT*, vol. 11, no. 11, pp. 488–491, 2023.

[15] B. R. Cherukuri, "Ethical AI in cloud: Mitigating risks in machine learning models," *World J. Adv. Eng. Technol. Sci.*, vol. 1, no. 1, pp. 096–106, Dec. 2020, doi: 10.30574/wjaets.2020.1.1.0018.

[16] S. P. Kalava, "Exploring Nextgen Customer Support: How AI is Changing the Game," *North Am. J. Eng. Res.*, vol. 5, no. 2, 2024.

[17] V. Singh, "AI-Driven ERP Evolution: Enhancing Supply Chain Resilience with Neural Networks and Predictive LSTM Models," *Eur. J. Adv. Eng. Technol.*, vol. 12, no. 2, pp. 47–52, 2025.

[18] A. G. Prabhu, A. N. MV, and C. Kurian, "A Study on Security Issues in SAAS Cloud Computing," *Int. J. Comput. Sci. Mob. Comput.*, vol. 10, no. 3, pp. 66–71, Mar. 2021, doi: 10.47760/ijcsmc.2021.v10i03.008.

[19] A. M. A. Ibrahim, N. S. Abdullah, and M. Bahari, "Software as a Service Challenges: A Systematic Literature Review," in *Lecture Notes in Networks and Systems*, 2023. doi: 10.1007/978-3-031-18344-7_17.

[20] V. Prajapati, "Role of Identity and Access Management in Zero Trust Architecture for Cloud Security: Challenges and Solutions," *Int. J. Adv. Res. Sci. Commun. Technol.*, vol. 5, no. 3, pp. 6–18, Mar. 2025, doi: 10.48175/IJARSCT-23902.

[21] K. Hashizume, D. G. Rosado, E. Fernández-Medina, and E. B. Fernandez, "An analysis of security issues for cloud computing," *J. Internet Serv. Appl.*, vol. 4, no. 1, pp. 1–13, 2013, doi: 10.1186/1869-0238-4-5.

[22] V. Shah, "Managing Security and Privacy in Cloud Frameworks: A Risk with Compliance Perspective for Enterprises," *Int. J. Curr. Eng. Technol.*, vol. 12, no. 06, pp. 1–13, 2022, doi: 10.14741/ijcet/v.12.6.16.

[23] D. Patel, "Zero Trust and DevSecOps in Cloud-Native Environments with Security Frameworks and Best Practices," *Int. J. Adv. Res. Sci. Commun. Technol.*, vol. 3, no. 3, 2023.

[24] P. Pathak, A. Shrivastava, and S. Gupta, "A survey on various security issues in delay tolerant networks," *J Adv Shell Program.*, vol. 2, no. 2, pp. 12–18, 2015.

[25] S. Mishra and D. Pandey, "Features and Resolution of SAAS Model in Cloud Computing," *GADL J. Invent. Comput. Sci. Commun. Technol.*, vol. 4, no. 2, pp. 30–42, 2018.

[26] A. R. Duggasani, "Scalable and Optimized Load Balancing in Cloud Systems: Intelligent Nature-Inspired Evolutionary Approach," *Int. J. Innov. Sci. Res. Technol.*, vol. 10, no. 5, pp. 2153–2160, May 2025, doi: 10.38124/ijisrt/25may1290.

[27] C.-H. Wu and P. D. L. Pambudi, "Digital transformation in fintech: Choosing between application and Software as a Service (SaaS)," *Asia Pacific Manag. Rev.*, vol. 30, no. 2, p. 100342, Jun. 2025, doi: 10.1016/j.apmrv.2024.12.006.

[28] S. Aleem, R. Batool, S. Alkobaisi, F. Ahmed, and A. Masood Khattak, "SaaS Application Maturity Assessment Model," *IEEE Access*, vol. 12, pp. 128305–128325, 2024, doi: 10.1109/ACCESS.2024.3455937.

[29] S. Arora, S. R. Thota, and S. Gupta, "Artificial Intelligence-Driven Big Data Analytics for Business Intelligence in SaaS Products," in *2024 First International Conference on Pioneering Developments in Computer Science & Digital Technologies (IC2SDT)*, IEEE, Aug. 2024, pp. 164–169. doi: 10.1109/IC2SDT62152.2024.10696409.

[30] Q. Liu, N. Xiao, L. Xi, X. Xia, and H. Hu, "Research on 'Building Block' Digital Logic Simulation Platform in SaaS Mode," in *2023 3rd International Symposium on Computer Technology and Information Science (ISCTIS)*, IEEE, Jul. 2023, pp. 512–516. doi: 10.1109/ISCTIS58954.2023.10213135.

[31] Y. Shang, J. Jiang, and R. Zhang, "Research on SaaS ERP service provider selection model of small and medium-sized enterprises based on ELECTRE-IV," in *2023 International Conference on Frontiers of Robotics and Software Engineering (FRSE)*, IEEE, Jun. 2023, pp. 377–386. doi: 10.1109/FRSE58934.2023.00059.

[32] Z. Zhiwei, S. Haosong, G. Dongying, H. Fangfang, L. Qinghai, and C. Chuanjian, "IT Automatic Operation and Maintenance Service System Based on SaaS Architecture," in *2022 IEEE Conference on Telecommunications, Optics and Computer Science (TOCS)*, IEEE, Dec. 2022, pp. 662–665. doi: 10.1109/TOCS56154.2022.10015925.

