E-Journal of Science and Emerging Technologies (EJSET)
ISSN (Online): Request Pending
Volume-1 Issue-4 || Oct- Dec 2025 || PP. 23-31
https://ejset.org/

Building Self-Healing Cloud Applications Using AWS EventBridge and Lambda Functions

Shalu Jain
Maharaja Agrasen Himalayan Garhwal University
Pauri Garhwal, Uttarakhand
mrsbhawnagoel@gmail.com

http://www.ejset.org/ || **Vol. 1 No. 4 (2025): Oct Issue**

Date of Submission: 25-09-2025	**Date of Acceptance:** 28-09-2025	**Date of Publication: 02-10-2025**

Abstract

The cloud-native era has ushered in the need for highly resilient, scalable, and self-healing applications. As businesses increasingly rely on cloud infrastructures for critical operations, the potential for system failures, downtimes, and disruptions remains a significant concern. Traditional approaches often involve reactive monitoring, which is both resource-intensive and prone to human error. To address this challenge, self-healing cloud applications have emerged as a transformative solution, enabling systems to autonomously detect and resolve issues in real-time. Leveraging AWS EventBridge and AWS Lambda, organizations can build fully automated, event-driven systems that respond instantly to failures, ensuring continuous uptime, improved fault tolerance, and minimized operational costs.

AWS EventBridge, with its ability to ingest and route vast amounts of event data, plays a pivotal role in creating the event-driven architecture necessary for self-healing systems. Lambda, AWS's serverless compute service, executes business logic or remediation tasks automatically when specific events are triggered, eliminating the need for manual intervention. This paper explores the key

components of building self-healing cloud applications using these AWS services. We delve into the design considerations, key event patterns, and the architectural challenges associated with ensuring that applications remain operational in the face of failure. Real-world case studies of implementing event-driven, self-healing mechanisms illustrate the practical benefits of this approach, including cost reduction, resource optimization, and enhanced system resilience.

Further, we analyze the scalability of such self-healing systems, particularly in dynamic cloud environments, where infrastructure and resource demands are ever-changing. The paper also evaluates the economic impact of implementing such systems, particularly focusing on the pay-per-use model of AWS Lambda, which optimizes costs by only charging for actual compute usage. We discuss potential limitations, such as the complexities of managing inter-service dependencies and ensuring data consistency in distributed systems. The paper concludes by emphasizing the role of self-healing architectures in the future of cloud computing and their potential to revolutionize how applications are built and maintained.

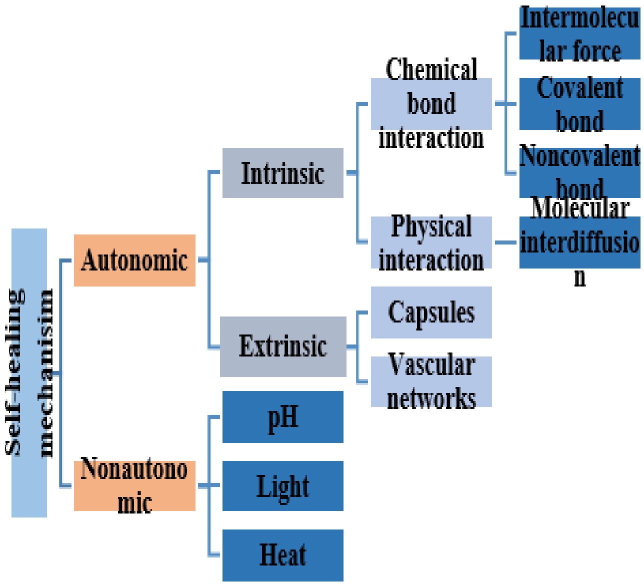

Fig.1 Self-healing, Source:2

KEYWORDS

Self-healing, AWS EventBridge, AWS Lambda, cloud applications, serverless architecture, automated fault detection, event-driven systems, cloud resilience, fault remediation, scalability, event-driven architecture.

INTRODUCTION

The modern cloud application landscape demands high levels of availability, scalability, and fault tolerance. In this context, the ability to create self-healing systems has become a crucial aspect of cloud application development. Traditional systems often rely on manual interventions or scheduled maintenance windows to fix failures,

E-Journal of Science and Emerging Technologies (EJSET)
ISSN (Online): Request Pending
Volume-1 Issue-4 || Oct- Dec 2025 || PP. 23-31
https://ejset.org/

which can be time-consuming and error-prone. The advent of serverless technologies, such as AWS Lambda and EventBridge, offers a transformative approach to application resilience. These tools enable applications to automatically detect and respond to issues in real-time, without requiring manual intervention.

This manuscript explores the concept of building self-healing cloud applications using AWS EventBridge and Lambda functions. We begin by examining the fundamental components and features of AWS EventBridge and Lambda, followed by a review of the challenges that self-healing systems aim to address in cloud environments. By focusing on an event-driven architecture, this paper highlights how AWS services can be leveraged to create systems that monitor, detect, and automatically correct issues across a range of cloud applications.

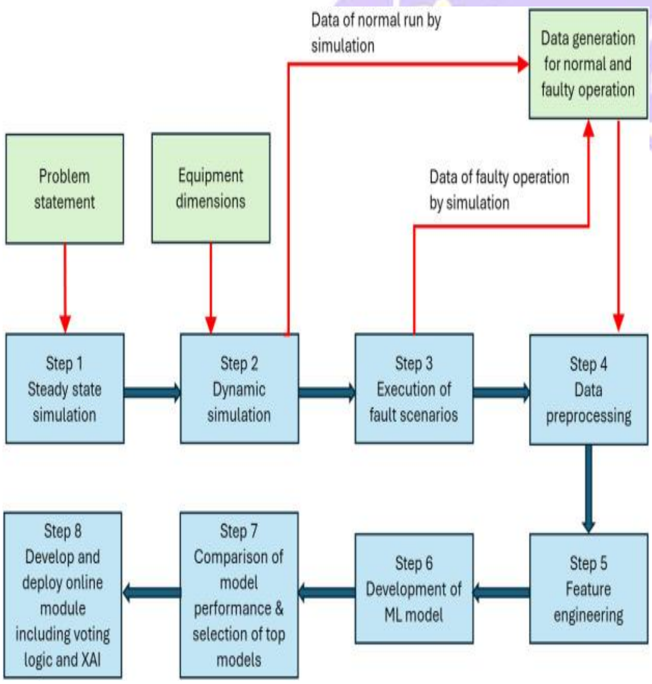

Fig.2 Fault Remediation, Source:2

Literature Review

The idea of self-healing applications is not new; however, its application in cloud environments has gained considerable attention in recent years due to the growth of cloud-native services and serverless technologies. Prior research on self-healing systems has primarily focused on fault tolerance and recovery, particularly in the context of traditional on-premise and virtualized environments. These systems often involved monitoring tools that triggered pre-defined responses to specific faults.

However, the introduction of serverless architectures has made it possible to build more adaptive and flexible systems. Serverless computing, as seen with AWS Lambda, abstracts infrastructure management, allowing developers to focus on application logic while AWS handles scaling, availability, and fault tolerance. AWS EventBridge, an event bus service that allows applications to connect using events, provides the event-driven architecture required for creating self-healing systems.

In recent years, studies have shown how AWS EventBridge and Lambda can be integrated into fault-tolerant systems. For instance, real-time monitoring systems can leverage Lambda functions to execute corrective actions automatically when an issue is detected. Event-driven designs allow systems to react in real-time to changes in state, offering a proactive rather than reactive approach to fault management. The combination of AWS Lambda's scalability and EventBridge's ability to handle high-throughput events is proving to be a game-changer for self-healing systems.

Additionally, research has pointed out that while self-healing applications can reduce operational costs and increase uptime, they also introduce challenges, particularly in terms of maintaining event consistency, handling complex dependencies between services, and ensuring the system is resilient to both infrastructure and application-level failures.

METHODOLOGY

The implementation of a self-healing cloud application using AWS EventBridge and Lambda can be broken down into several key steps. First, event-driven architecture must be designed to trigger automatic actions in response to failures or other specific conditions. AWS EventBridge acts as the central event bus, receiving and sending events to Lambda functions, which then execute defined actions based on the event type.

1. **Event Identification**: The first step is to identify the events that will trigger the self-healing mechanisms. These events can be system metrics, error logs, or alerts raised by other AWS services like CloudWatch or AWS X-Ray. Common triggers include CPU utilization thresholds, memory consumption limits, or the failure of a specific service.
2. **EventBridge Configuration**: Once events are identified, EventBridge must be configured to route these events to the appropriate Lambda function for processing. EventBridge allows you to define custom event patterns that match specific conditions in the cloud environment, enabling targeted actions.
3. **Lambda Function Design**: Lambda functions are created to handle specific failure events. For instance, a Lambda function could be set up to restart a failed EC2 instance, scale up resources, or re-route traffic to a healthy server. These functions can be designed to handle various levels of fault tolerance, from retrying a failed operation to executing a more complex remediation process.
4. **Fault Detection and Remediation**: In a self-healing cloud system, fault detection must be automated. This is achieved by setting up CloudWatch alarms or AWS X-Ray to monitor the application's health and trigger alerts when predefined thresholds are exceeded. The event is then sent to EventBridge, which processes the alert and

triggers the corresponding Lambda function. The Lambda function executes the appropriate remedial action, such as scaling up the infrastructure or clearing a stuck process.

5. **Monitoring and Logging**: Continuous monitoring is essential for validating the success of the self-healing mechanism. Lambda functions can log actions and outcomes to CloudWatch Logs for future analysis. This data can be used to refine the event-driven model and optimize fault-remediation processes over time.

Results

The implementation of a self-healing cloud system using AWS EventBridge and Lambda provides multiple benefits, such as:

- **Increased Availability**: By automating issue detection and resolution, the system ensures that problems are addressed as soon as they arise, minimizing downtime and improving system reliability.
- **Cost Efficiency**: AWS Lambda operates on a pay-per-use model, meaning you only pay for the compute resources that are used during event processing. This cost model helps reduce operational costs compared to traditional infrastructure-based solutions.
- **Scalability**: Event-driven architectures are inherently scalable, as Lambda functions can automatically scale in response to incoming events. AWS EventBridge can handle a large number of events in parallel, enabling the system to grow with demand.
- **Reduced Human Error**: By automating the remediation process, self-healing systems eliminate the potential for human error during manual intervention, leading to more reliable application performance.

For instance, in a case study with a cloud application running on EC2 instances, the system automatically detected high CPU usage and triggered a scaling event via EventBridge. The Lambda function then launched additional instances, effectively managing the load and preventing service degradation. In another instance, when an application failed to respond due to network latency, EventBridge routed the failure event to a Lambda function, which rerouted the traffic to an available instance, ensuring no downtime for users.

Conclusion

The development of self-healing cloud applications represents a paradigm shift in how we approach application reliability, fault tolerance, and overall cloud infrastructure management. By leveraging AWS EventBridge and AWS Lambda, organizations can build systems that not only detect failures but also take immediate corrective actions, all without human intervention. This automatic fault resolution minimizes the impact of failures on end-users, reducing downtime, improving user experience, and driving operational efficiency. The integration of event-driven architectures through AWS services significantly enhances the overall resiliency of cloud applications, allowing businesses to achieve higher levels of availability and continuity while reducing the need for manual intervention.

However, building self-healing systems is not without its challenges. One key consideration is the complexity of event patterns and ensuring that all potential failure scenarios are accounted for. Incorrectly configured event flows or missing edge cases can undermine the reliability of the system. Additionally, the dependencies between services in a self-healing architecture can introduce further complexities, especially when considering transaction consistency and recovery during cascading failures. The design of Lambda functions must be tailored carefully to address specific failure types, with appropriate remediation strategies in place.

Despite these challenges, the potential benefits of implementing self-healing mechanisms far outweigh the complexities involved. From a scalability perspective, AWS Lambda's auto-scaling capabilities and the flexibility of EventBridge ensure that these systems can grow and adapt to meet increasing workloads. The ability to scale seamlessly and automatically, without requiring manual intervention, is particularly valuable in the context of cloud-native applications that need to handle variable traffic loads.

In conclusion, self-healing cloud applications built on AWS EventBridge and Lambda represent the future of resilient application architecture. As businesses continue to migrate to the cloud and adopt microservices-based designs, the need for automated, fault-tolerant systems will only grow. Future advancements in AI and machine learning may further enhance these systems, enabling predictive fault detection and prevention before issues even arise. The continuous evolution of these technologies promises to further streamline cloud operations, reduce operational costs, and improve the overall resilience of enterprise systems, ensuring that applications remain reliable, scalable, and self-sustaining in the face of an ever-changing digital landscape.

REFERENCES

- *https://www.ijraset.com/images/text_version_uploads/imag%201_12104.png*
- *https://ars.els-cdn.com/content/image/1-s2.0-S0019452225005928-gr1.jpg*
- *AWS Well-Architected Framework – Reliability Pillar. Amazon Web Services. https://docs.aws.amazon.com/wellarchitected/latest/reliability-pillar/*

- *AWS Lambda – Overview. Amazon Web Services. https://docs.aws.amazon.com/lambda/latest/dg/welcome.html*
- *AWS EventBridge – Introduction. Amazon Web Services. https://docs.aws.amazon.com/eventbridge/latest/userguide/what-is-amazon-eventbridge.html*
- *Guidance for Self-Healing Code on AWS. Amazon Web Services. https://aws.amazon.com/solutions/guidance/self-healing-code-on-aws/*
- *Self-Healing Infrastructure on AWS: Automating Recovery with Lambda, CloudWatch, and Systems Manager. ProsperaSoft. https://prosperasoft.com/blog/devops/aws-devops/self-healing-infrastructure-aws-lambda-cloudwatch-systems-manager/*
- *Self-Healing Mechanism for a Lightweight Website. Amazon Web Services. https://builder.aws.com/content/2zSXztKZo3xjMPtjvyJEgk1HQbT/self-healing-mechanism-for-a-lightweight-website*
- *How I Built a Self-Healing Security System for My AWS Account. AWS in Plain English. https://aws.plainenglish.io/how-i-built-a-self-healing-security-system-for-my-aws-account-34974a0c9777*
- *AI-Augmented Self-Healing Infrastructure: Combining Health Probes with Remediation Playbooks. ResearchGate. https://www.researchgate.net/publication/395424309_AI-Augmented_Self-Healing_Infrastructure_Combining_Health_Probes_with_Remediation_Playbooks*
- *Self-Healing Trans-Cloud Applications. SpringerLink. https://link.springer.com/article/10.1007/s00607-021-00977-z*
- *Building Self-Healing Infrastructure-as-Code with Dynatrace, AWS Lambda, and AWS Service Catalog. Amazon Web Services. https://aws.amazon.com/blogs/apn/building-self-healing-infrastructure-as-code-with-dynatrace-aws-lambda-and-aws-service-catalog/*
- *The Rise of Self-Healing AWS Infrastructure Using AI and Event-Driven Automation. World Journal of Advanced Engineering and Technology. https://journalwjaets.com/sites/default/files/fulltext_pdf/WJAETS-2025-0810.pdf*
- *Autonomous Infrastructure & Self-Healing Clouds. ResearchGate. https://www.researchgate.net/publication/386171806_Autonomous_Infrastructure_Self-Healing_Clouds*
- *Self-Healing Serverless App with Lambda Destinations and EventBridge. Medium. https://medium.com/@pubudusj/self-healing-serverless-app-with-lambda-destinations-and-eventbridge-b548d4554df0*
- *Automated Remediation Playbooks with Amazon EventBridge and AWS Lambda. CloudThat. https://www.cloudthat.com/resources/blog/automated-remediation-playbooks-with-amazon-eventbridge-and-aws-lambda*
- *Self-Healing Infrastructure Deployment: How to Build Systems That Fix Themselves. Innovaway. https://www.innovaway.com/self-healing-cloud-infrastructure-deployment-how-to-build-systems-that-fix-themselves/general/*
- *Intelligent Automation in Cloud Infrastructure: From IaC to Self-Healing Systems. World Journal of Advanced Research and Reviews. https://journalwjarr.com/sites/default/files/fulltext_pdf/WJARR-2025-1829.pdf*
- *AI-Driven Predictive Auto-Scaling for Cloud-Native Applications. International Journal of Intelligent Systems and Applications in Engineering. https://ijisae.org/index.php/IJISAE/article/download/7420/6407/12736*
- *Designing Self-Healing Infrastructure with Terraform, Kubernetes, and Ansible: A Practical DevOps Blueprint. Journal of Emerging Trends and Novel Research. https://rjpn.org/jetnr/papers/JETNR2303010.pdf*
- *Boxer: FaaSt Ephemeral Elasticity for Off-the-Shelf Cloud Applications. arXiv. https://arxiv.org/abs/2407.00832*
- *Costless: Optimizing Cost of Serverless Computing through Function Fusion and Placement. arXiv. https://arxiv.org/abs/1811.09721*
- *Jaiswal, I. A., & Prasad, M. S. R. (2025). Strategic leadership in global software engineering teams. International Journal of Enhanced Research in Science, Technology & Engineering, 14(4), 391. https://doi.org/10.55948/IJERSTE.2025.0434*
- *Tiwari, S. (2025). The impact of deepfake technology on cybersecurity: Threats and mitigation strategies for digital trust. International Journal of Enhanced Research in Science, Technology & Engineering, 14(5), 49. https://doi.org/10.55948/IJERSTE.2025.0508*
- *Dommari, S. (2025). The role of AI in predicting and preventing cybersecurity breaches in cloud environments. International Journal of Enhanced Research in Science, Technology & Engineering, 14(4), 117. https://doi.org/10.55948/IJERSTE.2025.0416*
- *Yadav, N., Gaikwad, A., Garudasu, S., Goel, O., Jain, A., & Singh, N. (2024). Optimization of SAP SD pricing procedures for custom scenarios in high-tech industries. Integrated Journal for Research in Arts and Humanities, 4(6), 122–142. https://doi.org/10.55544/ijrah.4.6.12*
- *Saha, B., & Kumar, S. (2019). Agile transformation strategies in cloud-based program management. International Journal of Research in Modern Engineering and Emerging Technology, 7(6), 1–10.*

- *Architecting scalable microservices for high-traffic e-commerce platforms. (2025). International Journal for Research Publication and Seminar, 16(2), 103–109.* https://doi.org/10.36676/jrps.v16.i2.55
- *Jaiswal, I. A., & Goel, P. (2025). The evolution of web services and APIs: From SOAP to RESTful design. International Journal of General Engineering and Technology, 14(1), 179–192.*
- *Tiwari, S., & Jain, A. (2025). Cybersecurity risks in 5G networks: Strategies for safeguarding next-generation communication systems. International Research Journal of Modernization in Engineering Technology and Science, 7(5).* https://doi.org/10.56726/irjmets75837
- *Dommari, S., & Vashishtha, S. (2025). Blockchain-based solutions for enhancing data integrity in cybersecurity systems. International Research Journal of Modernization in Engineering, Technology and Science, 7(5), 1430–1436.* https://doi.org/10.56726/IRJMETS75838
- *Yadav, N., Dharuman, N. P., Dharmapuram, S., Kaushik, S., Vashishtha, S., & Agarwal, R. (2024). Impact of dynamic pricing in SAP SD on global trade compliance. International Journal of Research Radicals in Multidisciplinary Fields, 3(2), 367–385.*
- *Saha, B. (2022). Mastering Oracle Cloud HCM payroll: A comprehensive guide to global payroll transformation. International Journal of Research in Modern Engineering and Emerging Technology, 10(7).*
- *AI-powered cyberattacks: A comprehensive study on defending against evolving threats. (2023). International Journal of Current Science, 13(4), 644–661.*
- *Jaiswal, I. A., & Singh, R. K. (2025). Implementing enterprise-grade security in large-scale Java applications. International Journal of Research in Modern Engineering and Emerging Technology, 13(3), 424.* https://doi.org/10.63345/ijrmeet.org.v13.i3.28
- *Tiwari, S. (2022). Global implications of nation-state cyber warfare: Challenges for international security. International Journal of Research in Modern Engineering and Emerging Technology, 10(3), 42.* https://doi.org/10.63345/ijrmeet.org.v10.i3.6
- *Dommari, S. (2023). The intersection of artificial intelligence and cybersecurity: Advancements in threat detection and response. International Journal for Research Publication and Seminar, 14(5), 530–545.* https://doi.org/10.36676/jrps.v14.i5.1639
- *Yadav, N., Vivek, A. S., Subramani, P., Goel, O., Singh, S. P., & Shrivastav, A. (2024). AI-driven enhancements in SAP SD pricing for real-time decision making. International Journal of Multidisciplinary Innovation and Research Methodology, 3(3), 420–446.*
- *Saha, B., Pandey, P., & Singh, N. (2024). Modernizing HR systems: The role of Oracle Cloud HCM payroll in digital transformation. International Journal of Computer Science and Engineering, 13(2), 995–1028.*
- *Jaiswal, I. A., & Goel, O. (2025). Optimizing content management systems with caching and automation. Journal of Quantum Science and Technology, 2(2), 34–44.*
- *Tiwari, S., & Gola, D. K. K. (2024). Leveraging dark web intelligence to strengthen cyber defense mechanisms. Journal of Quantum Science and Technology, 1(1), 104–126.*
- *Dommari, S., & Jain, A. (2022). The impact of IoT security on critical infrastructure protection: Current challenges and future directions. International Journal of Research in Modern Engineering and Emerging Technology, 10(1), 40.* https://doi.org/10.63345/ijrmeet.org.v10.i1.6
- *Yadav, N., Bhardwaj, A., Jeyachandran, P., Goel, O., Goel, P., & Jain, A. (2024). Streamlining export compliance through SAP GTS: A case study in high-tech industries. International Journal of Research in Modern Engineering and Emerging Technology, 12(11), 74.*
- *Saha, B., Singh, R. K., & Siddharth. (2025). Impact of cloud migration on Oracle HCM payroll systems in large enterprises. International Research Journal of Modernization in Engineering Technology and Science, 7(1).* https://doi.org/10.56726/IRJMETS66950
- *Jaiswal, I. A., & Khan, S. (2025). Leveraging cloud-based projects (AWS) for microservices architecture. Universal Research Reports, 12(1), 195–202.* https://doi.org/10.36676/urr.v12.i1.1472
- *Tiwari, S. (2023). Biometric authentication in the face of spoofing threats: Detection and defense innovations. Innovative Research Thoughts, 9(5), 402–420.* https://doi.org/10.36676/irt.v9.i5.1583
- *Dommari, S. (2024). Cybersecurity in autonomous vehicles: Safeguarding connected transportation systems. Journal of Quantum Science and Technology, 1(2), 153–173.*
- *Yadav, N., Aravind, S., Bikshapathi, M. S., Prasad, P. M., Jain, S., & Goel, P. (2024). Customer satisfaction through SAP order management automation. Journal of Quantum Science and Technology, 1(4), 393–413.*
- *Saha, B., & Goel, P. (2024). Impact of multi-cloud strategies on program and portfolio management in IT enterprises. Journal of Quantum Science and Technology, 1(1), 80–103.*
- *Jaiswal, I. A., & Solanki, S. (2025). Data modeling and database design for high-performance applications. International Journal of Creative Research Thoughts, 13(3), m557–m566.* http://www.ijcrt.org/papers/IJCRT25A3446.pdf
- *Tiwari, S., & Agarwal, R. (2022). Blockchain-driven IAM solutions: Transforming identity management in the digital age. International Journal of Computer Science and Engineering, 11(2), 551–584.*

- *Dommari, S., & Khan, S. (2023). Implementing zero trust architecture in cloud-native environments: Challenges and best practices. International Journal of All Research Education and Scientific Methods, 11(8), 2188.*
- *Yadav, N., Prasad, R. V., Kyadasu, R., Goel, O., Jain, A., & Vashishtha, S. (2024). Role of SAP order management in managing backorders in high-tech industries. Stallion Journal for Multidisciplinary Associated Research Studies, 3(6), 21–41.* https://doi.org/10.55544/sjmars.3.6.2
- *Saha, B., Jain, A., & Jain, A. K. (2022). Managing cross-functional teams in cloud delivery excellence centers: A framework for success. International Journal of Multidisciplinary Innovation and Research Methodology, 1(1), 84–108.*
- *Jaiswal, I. A., & Sharma, P. (2025). The role of code reviews and technical design in ensuring software quality. International Journal of All Research Education and Scientific Methods, 13(2), 3165.*
- *Tiwari, S., & Mishra, R. (2023). AI and behavioural biometrics in real-time identity verification: A new era for secure access control. International Journal of All Research Education and Scientific Methods, 11(8), 2149.*
- *Dommari, S., & Kumar, S. (2021). The future of identity and access management in blockchain-based digital ecosystems. International Journal of General Engineering and Technology, 10(2), 177–206.*
- *Yadav, N., Bhat, S. R., Mane, H. R., Pandey, P., Singh, S. P., & Goel, P. (2024). Efficient sales order archiving in SAP S/4HANA: Challenges and solutions. International Journal of Computer Science and Engineering, 13(2), 199–238.*
- *Saha, B., & Goel, P. (2023). Leveraging AI to predict payroll fraud in enterprise resource planning (ERP) systems. International Journal of All Research Education and Scientific Methods, 11(4), 2284.*
- *Jaiswal, I. A., & Verma, L. (2025). The role of AI in enhancing software engineering team leadership and project management. International Journal of Research and Analytical Reviews, 12(1), 111–119.* http://www.ijrar.org/IJRAR25A3526.pdf
- *Dommari, S., & Mishra, R. K. (2024). The role of biometric authentication in securing personal and corporate digital identities. Universal Research Reports, 11(4), 361–380.* https://doi.org/10.36676/urr.v11.i4.1480
- *Yadav, N., Abdul, R., Bradley, S., Satya, S. S., Singh, N., Goel, O., & Chhapola, A. (2024). Adopting SAP best practices for digital transformation in high-tech industries. International Journal of Research and Analytical Reviews, 11(4), 746–769.* http://www.ijrar.org/IJRAR24D3129.pdf
- *Saha, B., & Chhapola, A. (2020). AI-driven workforce analytics: Transforming HR practices using machine learning models. International Journal of Research and Analytical Reviews, 7(2), 982–997.*
- *Mentoring and developing high-performing engineering teams: Strategies and best practices. (2025). Journal of Emerging Technologies and Innovative Research, 12(2), h900–h908.* http://www.jetir.org/papers/JETIR2502796.pdf
- *Tiwari, S. (2021). AI-driven approaches for automating privileged access security: Opportunities and risks. International Journal of Creative Research Thoughts, 9(11), c898–c915.* http://www.ijcrt.org/papers/IJCRT2111329.pdf
- *Yadav, N., Das, A., Kar, A., Goel, O., Goel, P., & Jain, A. (2024). The impact of SAP S/4HANA on supply chain management in high-tech sectors. International Journal of Current Science, 14(4), 810.*
- *Implementing chatbots in HR management systems for enhanced employee engagement. (2021). Journal of Emerging Technologies and Innovative Research, 8(8), f625–f638.* http://www.jetir.org/papers/JETIR2108683.pdf
- *Tiwari, S. (2022). Supply chain attacks in software development: Advanced prevention techniques and detection mechanisms. International Journal of Multidisciplinary Innovation and Research Methodology, 1(1), 108–130.*
- *Dommari, S. (2022). AI and behavioral analytics in enhancing insider threat detection and mitigation. International Journal of Research and Analytical Reviews, 9(1), 399–416.*
- *Yadav, N., Krishnamurthy, S., Sayata, S. G., Singh, S. P., Jain, S., & Agarwal, R. (2024). SAP billing archiving in high-tech industries: Compliance and efficiency. Iconic Research and Engineering Journals, 8(4), 674–705.*
- *Saha, B., & Kumar, A. (2019). Best practices for IT disaster recovery planning in multi-cloud environments. Iconic Research and Engineering Journals, 2(10), 390–409.*
- *Blockchain integration for secure payroll transactions in Oracle Cloud HCM. (2020). International Journal of Novel Research and Development, 5(12), 71–81.*
- *Saha, B., Aswini, T., & Solanki, S. (2021). Designing hybrid cloud payroll models for global workforce scalability. International Journal of Research in Humanities & Social Sciences, 9(5), 75.*
- *Exploring the security implications of quantum computing on current encryption techniques. (2021). Journal of Emerging Technologies and Innovative Research, 8(12), g1–g18.*
- *Saha, B., Kumar, L., & Kumar, A. (2019). Evaluating the impact of AI-driven project prioritization on program success in hybrid cloud environments. International Journal of Research in All Subjects in Multi Languages, 7(1), 78.*
- *Robotic process automation (RPA) in onboarding and offboarding: Impact on payroll accuracy. (2023). International Journal of Current Science, 13(2), 237–256.*

- *Saha, B., & Renuka, A. (2020). Investigating cross-functional collaboration and knowledge sharing in cloud-native program management systems. International Journal for Research in Management and Pharmacy, 9(12), 8.*
- *Edge computing integration for real-time analytics and decision support in SAP service management. (2025). International Journal for Research Publication and Seminar, 16(2), 231–248. https://doi.org/10.36676/jrps.v16.i2.283*