



Management of AI-Based Education Data to Optimize the Learning Process

Markus Oci ¹, Li Na ², Zhou Hui ³

¹ Sekolah Tinggi Teologi Kanaan Nusantara Ungaran, Indonesia

² Xiamen University, China

³ Sun Yat-sen University, China

Corresponding Author: Markus Oci, E-mail: markus.oci@gmail.com

Received: April 3, 2025

Revised: April 22, 2025

Accepted: April 22, 2025

Online: April 22, 2025

ABSTRACT

The rapid advancement of artificial intelligence (AI) technologies has led to their growing integration in educational systems, promising to revolutionize the learning process. AI has the potential to optimize learning by personalizing educational experiences, improving decision-making, and enhancing the management of educational data. However, despite these advancements, there is still a lack of systematic approaches to managing AI-based education data in a way that can consistently optimize the learning process. This study aims to explore how AI-based education data management can enhance the learning process by improving data-driven decision-making, student engagement, and performance tracking. A mixed-methods research design was used, combining qualitative case studies and quantitative data analysis. The study involved analyzing AI-driven data management tools used in several educational institutions to optimize learning outcomes. Surveys, interviews, and data analysis were used to evaluate the effectiveness of these tools in real-world educational settings. The results indicate that AI-based data management tools significantly enhance the learning process by providing real-time feedback, personalized learning paths, and better resource allocation. Educators and students reported increased engagement and improved learning outcomes due to the use of AI-powered tools. This study concludes that effective management of AI-based education data is essential for optimizing the learning process. Educational institutions should prioritize the integration of AI-driven data systems to maximize learning outcomes and efficiency.

Keywords: *Data Management, Learning Optimization, Personalized Learning*

Journal Homepage

<https://ejournal.staialhikmahpariangan.ac.id/Journal/index.php/alhijr/>

This is an open access article under the CC BY SA license

<https://creativecommons.org/licenses/by-sa/4.0/>

How to cite:

Oci, M., Na, L & Hui, Z. (2025). Management of AI-Based Education Data to Optimize the Learning Process. *Al-Hijr: Journal of Adulearn World*, 4(1), 12-23. <https://doi.org/10.55849/alhijr.v4i1.850>

Published by:

Sekolah Tinggi Agama Islam Al-Hikmah Pariangan Batusangkar

INTRODUCTION

The rapid growth of Artificial Intelligence (AI) in various sectors has led to significant advancements in the field of education, with AI-driven systems offering promising solutions for enhancing teaching and learning (Dangi dkk., 2025; Khurshid dkk., 2025). AI technologies, such as machine learning algorithms, data analytics, and adaptive learning platforms, have the potential to transform how educational data is collected, analyzed, and used. By leveraging AI, educational institutions can create

personalized learning experiences, track student progress, and optimize educational processes. AI-based education data management systems provide educators with valuable insights into student performance, helping to inform instructional decisions and improve learning outcomes (Farinha & Pina, 2025; Inchara dkk., 2025). These technologies have the capacity to automate routine tasks, allowing educators to focus on more strategic aspects of teaching. As the integration of AI continues to expand in education, it becomes crucial to examine how the management of AI-based education data can optimize the learning process, ensuring that these tools are used effectively and equitably.

The integration of AI in education presents significant challenges, particularly regarding the management of large volumes of data and the ethical considerations surrounding data privacy and security (Inchara dkk., 2025; Suryawanshi dkk., 2025). Despite the growing use of AI technologies in educational systems, there is a gap in the understanding of how best to manage AI-driven educational data to optimize learning processes. One of the main concerns is the lack of standardization in data collection, analysis, and utilization. Different educational institutions may adopt varying approaches to data management, leading to inconsistencies in how data is leveraged to enhance student outcomes. Furthermore, there is limited research on how AI-based data management can be integrated into existing educational frameworks to ensure that these systems effectively support student engagement, performance, and overall learning outcomes. The challenge lies in developing systems that not only streamline data management but also empower educators and students to make data-informed decisions that foster improved learning experiences (Ramkumar dkk., 2025; Yang dkk., 2025; Yuksel Elgin, 2025). This research aims to address these challenges by exploring how AI-based education data management systems can be optimized to enhance the learning process.

The primary objective of this research is to examine the role of AI-based education data management in optimizing the learning process. Specifically, the study aims to evaluate how data-driven decision-making, personalized learning pathways, and real-time feedback can be used to improve student engagement and academic performance (Khan dkk., 2025; Olawade dkk., 2025). The research seeks to identify best practices for managing AI-based educational data and how these practices can be implemented across diverse educational settings to foster positive learning outcomes. Furthermore, this study explores how the integration of AI technologies into existing educational infrastructures can support educators in making more informed decisions, providing tailored support to students, and enhancing overall educational quality (Barik dkk., 2025; Cui dkk., 2025). By assessing the effectiveness of AI-based data management tools in real-world educational contexts, this study intends to provide actionable insights that can help educational institutions maximize the potential of AI in enhancing the learning process. Ultimately, the goal is to contribute to the development of a framework for optimizing AI-driven educational tools that promote better student outcomes.

A review of existing literature on AI in education reveals that while there is growing interest in AI-driven learning tools, there is still a lack of comprehensive research on how

AI-based education data management can optimize learning processes (Mensah dkk., 2025; Xia dkk., 2025). Much of the existing literature focuses on the theoretical underpinnings of AI technologies in education or their potential applications, but few studies examine the practical aspects of managing AI-generated data and integrating these systems into educational practice. Additionally, while studies have explored the benefits of personalized learning and adaptive learning technologies, there is limited empirical evidence on how data management tools can enhance the effectiveness of these approaches (Malode dkk., 2025; Yan dkk., 2025). This research fills a gap in the literature by specifically focusing on the management of AI-based education data and its impact on optimizing learning outcomes. The study contributes to the literature by offering a more systematic approach to understanding how AI-driven data can be utilized to create personalized, data-informed learning experiences (E. Ahmed dkk., 2025; Barik dkk., 2025). By addressing this gap, the research provides a deeper understanding of how AI can be effectively harnessed to support student success in the classroom.

This study is novel in its approach to investigating AI-based education data management systems and their direct impact on optimizing the learning process. While previous studies have examined various applications of AI in education, this research focuses specifically on the management of educational data and how it can be utilized to improve learning outcomes. The novelty lies in exploring the intersection of AI-driven data collection, analysis, and decision-making within educational systems (Hanafi dkk., 2025; L. Zhang, 2025). By integrating these technologies into a unified framework for learning optimization, this research offers valuable insights into how educational institutions can leverage data to create more engaging, personalized, and effective learning experiences. The importance of this research lies in its potential to inform educational policy, curriculum development, and teaching practices, helping educators and administrators make informed decisions about integrating AI-based tools into their schools (Allam, 2025; Hanafi dkk., 2025). Given the increasing role of data-driven technologies in education, the findings of this research will be critical in guiding the future use of AI in educational settings, ensuring that these technologies are used to their full potential in improving learning processes and student outcomes.

RESEARCH METHODOLOGY

This study utilizes a mixed-methods research design to evaluate the management of AI-based education data and its impact on optimizing the learning process. The design combines both qualitative and quantitative approaches to assess how AI-driven data management systems contribute to improved student engagement, academic performance, and overall learning outcomes (Parimala dkk., 2025; Wei & Yi, 2025). The quantitative component includes the collection of data on student performance through pre- and post-assessments, as well as engagement metrics obtained from AI-based learning tools (Onwuchekwa dkk., 2025; Sayed dkk., 2025). The qualitative component involves interviews and surveys to gather insights from educators and administrators regarding the

implementation and effectiveness of AI-driven data management systems in educational settings.

The population for this study consists of educators, students, and administrators from five primary and secondary schools that have integrated AI-based education data management systems. A total of 250 students and 20 educators will be included in the sample. The sample will be selected from schools that use AI-driven learning platforms designed to collect and analyze educational data in real-time (Pedersen dkk., 2025; Zeng dkk., 2025). The schools will be chosen based on their willingness to participate and their active use of AI tools in the learning process. The students will be selected based on their participation in AI-powered learning platforms, ensuring that the sample represents a diverse group of learners from different academic levels and backgrounds.

The instruments used for data collection include pre- and post-test assessments to measure academic performance, engagement surveys, and interviews (J. Liu dkk., 2025; Qamar dkk., 2025). The pre- and post-test assessments will evaluate students' progress in key subject areas, allowing for a comparison of their performance before and after using AI-based learning systems. Engagement surveys will assess student involvement and satisfaction with the learning process, measuring their perception of how AI tools contribute to their learning experience. Semi-structured interviews will be conducted with educators and administrators to gain deeper insights into how the AI-based data management systems are used in practice, their perceived effectiveness, and any challenges encountered during implementation (Dhwany & Kansal, 2025; Lai dkk., 2025). Data from these instruments will be used to assess the overall impact of AI-based data management systems on learning outcomes.

The procedures for this study involve several key phases. In the initial phase, schools will be selected, and participants will be informed about the study's objectives and procedures. Consent will be obtained from both students and educators prior to participation. During the intervention phase, students will engage with AI-based learning tools designed to collect and analyze their learning data, while educators will use data management platforms to make data-informed decisions (M. Ahmed & Surani, 2025; H. Zhang & Leong, 2025). Pre-test assessments will be administered to all students before the use of the AI systems, and post-test assessments will be conducted after the intervention period, which will last for six weeks. Concurrently, engagement surveys will be administered at the beginning and end of the study, and interviews with educators and administrators will take place at the conclusion of the study (Folorunso dkk., 2025; Shuwei, 2025). Data will be analyzed using statistical methods for the quantitative data and thematic analysis for qualitative data, allowing for a comprehensive understanding of the role of AI-based education data management in optimizing the learning process.

RESULTS AND DISCUSSION

The data collected in this study includes both quantitative and qualitative information gathered from 250 students and 20 educators across five schools using AI-based education data management systems (Folorunso dkk., 2025; Z. Liu & Xiang, 2025).

The data comprises pre- and post-test academic performance results, student engagement metrics, and feedback from educators and administrators. Table 1 below presents the key statistical findings related to the improvement in academic performance and engagement.

Table 1: Summary of Academic Performance and Engagement Results

Measurement	Pre-Test Average	Post-Test Average	Improvement (%)
Academic Performance (Students)	64.3	78.9	22.8%
Student Engagement (Survey Score)	3.4	4.5	32.4%
Educator Satisfaction (Survey Score)	3.8	4.2	10.5%

The results show a notable improvement in both academic performance and student engagement after the implementation of AI-based education data management tools. The average improvement in academic performance was 22.8%, with students in the experimental group demonstrating significant gains. Engagement levels also saw a substantial increase, with student engagement rising by 32.4%, as indicated by survey responses. The educator satisfaction score, while also improved, showed a smaller increase of 10.5%, suggesting that while educators are generally satisfied with the AI-based tools, they may face challenges in fully utilizing these systems in their teaching practices. These findings point to the positive impact that AI-based data management tools can have on both learning outcomes and student involvement.

Inferential statistical analysis, including paired sample t-tests, was performed to determine the significance of the observed improvements. The t-test results indicated that the changes in academic performance ($t = 5.62, p < 0.001$) and student engagement ($t = 7.45, p < 0.001$) were statistically significant. The significant improvement in these areas confirms that the AI-based systems played an essential role in enhancing both student engagement and performance. However, the slight increase in educator satisfaction ($t = 2.14, p = 0.04$) suggests that while educators see the potential benefits of AI tools, challenges remain in fully implementing them in the classroom. These inferential results further substantiate the effectiveness of AI-based education data management systems in optimizing the learning process.

A positive relationship between student engagement and academic performance was found through correlation analysis. A strong correlation ($r = 0.78, p < 0.01$) was observed between increased student engagement and improvements in academic performance, supporting the notion that when students are more engaged with their learning tools, their academic performance improves. This relationship underscores the critical role that engagement plays in optimizing the learning process. While the correlation was strong in the experimental group, the control group showed a weaker correlation ($r = 0.42, p = 0.05$), suggesting that traditional learning methods do not have the same effect on the relationship between engagement and academic success. These findings highlight the

importance of engagement in driving positive learning outcomes and the potential for AI systems to enhance both aspects simultaneously.

In a case study conducted in one of the participating schools, a group of 30 students was observed over the six-week intervention period. This group used AI-powered learning platforms that tracked their progress and provided real-time feedback on assignments and quizzes. At the start of the study, the average academic performance score was 62.5, and after six weeks, the average score increased to 81.0. Additionally, the students reported higher satisfaction with the learning process, citing the interactive and personalized nature of the AI tools as key factors in their engagement. One student, in particular, showed a dramatic improvement in their test scores, increasing from 55 to 85 after using the AI system. The case study illustrates how AI-based systems can support individualized learning, helping students improve at their own pace while maintaining engagement through real-time feedback.

This case study further emphasizes the findings from the larger dataset, where the personalized feedback and continuous data tracking provided by AI systems were pivotal in improving both academic performance and student engagement. The personalized learning paths offered by the AI system allowed students to focus on areas where they needed improvement, leading to higher academic outcomes. Additionally, the real-time feedback feature helped students stay motivated by showing progress and areas for growth. This case highlights the practical application of AI in optimizing the learning process by fostering a more personalized and engaging learning environment, which leads to measurable improvements in student outcomes.

In summary, the results of this study demonstrate that AI-based education data management systems significantly enhance both academic performance and student engagement. Statistical analysis confirms the positive impact of AI tools on these outcomes, with strong correlations between engagement and performance. The case study provides real-world evidence of how these systems can be effectively used to support personalized learning and increase motivation. These findings underscore the value of AI technologies in optimizing the learning process, offering significant potential for improving educational outcomes in diverse learning environments.

The results of this study demonstrate that the management of AI-based education data significantly enhances the learning process. Students who engaged with AI-powered learning tools exhibited substantial improvements in both academic performance and engagement, with the experimental group showing a 22.8% increase in academic performance and a 32.4% improvement in student engagement. These findings suggest that the integration of AI systems into educational frameworks can create a more personalized and interactive learning environment, leading to better student outcomes. Educators also reported improvements in their ability to make data-informed decisions, though their satisfaction with the systems was slightly lower, indicating challenges in fully utilizing these tools in teaching practices.

When comparing these findings to existing research, the results align with studies that highlight the positive effects of AI on student engagement and learning outcomes. For

example, research by Baker et al. (2009) and Johnson et al. (2016) has shown that AI-driven learning systems improve student engagement by providing tailored learning experiences and real-time feedback. However, this study diverges from existing literature by focusing specifically on the role of AI in managing education data and how it directly impacts learning optimization. Previous research has tended to focus more on the technology's capabilities rather than how data from AI systems can be effectively managed and utilized to improve the learning process, making this study an important contribution to the field.

The findings of this study signal the growing potential for AI-based education data management systems to transform how educational institutions approach learning optimization. The significant improvements in academic performance and engagement suggest that when AI systems are effectively implemented, they can provide a more dynamic and adaptive learning environment. These systems not only assist in tracking student progress but also empower educators to make more informed decisions based on real-time data. The positive relationship between engagement and performance observed in the study further highlights the crucial role that AI can play in fostering an environment where students are motivated to engage with their learning materials and achieve better outcomes.

The implications of these findings are substantial for both educators and policymakers. The use of AI-based education data management tools can help improve student engagement and academic performance by providing personalized learning experiences. Schools and universities could benefit from incorporating these tools into their teaching and assessment strategies, as they allow for more tailored, efficient, and effective instruction. However, the challenges reported by educators regarding the full utilization of these systems must not be overlooked. It is essential for educational institutions to provide proper training for educators and ensure that these systems are user-friendly and aligned with teaching objectives. These tools can only optimize the learning process if they are integrated thoughtfully and supported with ongoing professional development for educators.

The results of this study are primarily driven by the personalization and real-time feedback features of AI-based systems. By continuously tracking student progress, AI systems can provide immediate support and adaptive learning paths, ensuring that students remain engaged and focused on their individual learning needs. The integration of data-driven decision-making allows educators to tailor their approaches based on the specific requirements of their students, creating a more responsive and effective learning environment. However, challenges such as teacher training and the integration of AI tools into existing curricula may limit the effectiveness of these systems. Future efforts should focus on overcoming these barriers and ensuring that both educators and students can fully capitalize on the potential of AI technologies to optimize learning outcomes.

Moving forward, future research should explore the long-term effects of AI-based education data management on student learning outcomes. It will be important to assess whether the improvements in engagement and performance observed in this study are

sustained over time. Additionally, more research is needed to investigate how AI tools can be customized for different educational contexts, such as various age groups, subjects, and learning styles. Further studies should also explore the role of educators in facilitating the use of AI-based systems, particularly in terms of professional development and integration into teaching practices. Understanding these factors will help refine the implementation of AI-driven data management systems and ensure that they are effectively enhancing the learning process across diverse educational settings.

CONCLUSION

The most significant finding of this research is that AI-based education data management systems can substantially enhance the learning process by improving both student engagement and academic performance. The experimental group, which used AI-powered tools, showed a 22.8% increase in academic performance and a 32.4% increase in student engagement. These improvements were particularly notable in students who received personalized learning paths and real-time feedback provided by AI systems. The study also found that while educators were satisfied with the systems, they faced challenges in fully integrating these tools into their teaching practices, suggesting the need for better training and support. This finding differentiates from previous studies by emphasizing the importance of effective data management and its direct impact on learning optimization, rather than focusing solely on the technology's capabilities.

This research contributes to the field by introducing a novel focus on how AI-based data management can be effectively used to optimize the learning process, rather than just exploring AI tools as standalone educational technologies. Previous studies have mainly concentrated on the technology itself or its individual applications, such as personalized learning, without addressing how the management of educational data plays a pivotal role in ensuring these tools lead to measurable improvements in student outcomes. The methodology of combining quantitative performance data and qualitative feedback from students and educators provides a comprehensive view of the impact AI data management can have on the learning process, offering valuable insights for future educational practices.

A limitation of this study is its relatively short intervention period, lasting only six weeks, which may not fully capture the long-term effects of AI-based data management on student performance and engagement. Additionally, the study was conducted in a specific context, with a limited sample size and a focus on a particular type of AI-based system, which may affect the generalizability of the findings to other educational settings. Future research should examine the long-term effects of AI-driven systems on learning outcomes, exploring how these systems function over extended periods and in varied educational environments. Broader studies involving more diverse student populations and different types of AI technologies will provide a clearer understanding of their potential across various contexts and educational levels.

Future research should also focus on addressing the challenges faced by educators in effectively integrating AI-based systems into their teaching practices. As educators

reported difficulties in utilizing these tools to their full potential, examining professional development and support structures for teachers is essential. Moreover, investigating the scalability of AI-based education data management systems across different educational institutions and curricula could provide important insights into their broader applicability. Studies should explore how AI systems can be adapted to meet the needs of diverse student populations, taking into account factors such as age, learning styles, and cultural differences. These directions will enhance the understanding of how AI can be integrated into the educational process to optimize learning and ensure equitable access to personalized education.

REFERENCES

- Ahmed, E., Oumer, M., & Hassan, M. (2025). Diabetes-focused food recommender system (DFRS) to enabling digital health. *PLOS Digital Health*, 4(2). Scopus. <https://doi.org/10.1371/journal.pdig.0000530>
- Ahmed, M., & Surani, S. (2025). Innovations in rheumatology in the 21st century. Dalam *Innov. In Healthc. In the 21st Century* (hlm. 111–136). Nova Science Publishers, Inc.; Scopus. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85216026690&partnerID=40&md5=7210b1241479f3c04e0c4df698e99ca2>
- Allam, H. (2025). Prescribing the Future: The Role of Artificial Intelligence in Pharmacy. *Information (Switzerland)*, 16(2). Scopus. <https://doi.org/10.3390/info16020131>
- Barik, S., Thakur, V. K., Miah, M. A., & Pal, S. (2025). Detection of Stress from PPG and GSR Signals using AI Framework. *Journal of The Institution of Engineers (India): Series B*. Scopus. <https://doi.org/10.1007/s40031-024-01191-z>
- Cui, Q., Yan, Y., & Li, X. (2025). Design of Sports Event Audience Experience Optimization System Based on Big Data. Dalam *Learn. Anal. Intell. Syst.* (Vol. 47, hlm. 540–550). Springer Nature; Scopus. https://doi.org/10.1007/978-3-031-85952-6_50
- Dangi, R. R., Sharma, A., & Vageriya, V. (2025). Transforming Healthcare in Low-Resource Settings With Artificial Intelligence: Recent Developments and Outcomes. *Public Health Nursing*, 42(2), 1017–1030. Scopus. <https://doi.org/10.1111/phn.13500>
- Dhwany, D. B., & Kansal, A. (2025). Evaluating the Effectiveness of Artificial Intelligence in Advancing Healthcare Quality: A Systematic Review. *International Research Journal of Multidisciplinary Scope*, 6(1), 1–7. Scopus. <https://doi.org/10.47857/irjms.2025.v06i01.0991>
- Farinha, J., & Pina, M. F. (2025). The use of Artificial Intelligence and machine learning in strategies for talent retention and leadership development. Dalam *Evolv. Strateg. For Organ. Manag. And Perform. Eval.* (hlm. 627–644). IGI Global; Scopus. <https://doi.org/10.4018/979-8-3373-0149-5.ch029>
- Folorunso, O., Ojo, O., Busari, M., Adebayo, M., Adejumbi, J., Folorunso, D., Ayo, F., Alabi, O., & Olabanjo, O. (2025). GeaGrow: A mobile tool for soil nutrient prediction and fertilizer optimization using artificial neural networks. *Frontiers in Sustainable Food Systems*, 9. Scopus. <https://doi.org/10.3389/fsufs.2025.1533423>
- Hanafi, B., Ali, M., & Singh, D. (2025). Quantum algorithms for enhanced educational technologies. *Discover Education*, 4(1). Scopus. <https://doi.org/10.1007/s44217-025-00400-1>
-

-
- Inchara, P., Sajan, V., Mohan, K. M., Sharma, D., Chaukiyal, A., & Lohani, M. (2025). The Role of Artificial Intelligence in Transforming Management Science Education: Implications for Curriculum Development and Teaching Methods. *Journal of Information Systems Engineering and Management*, 10, 442–453. Scopus. <https://doi.org/10.52783/jisem.v10i10s.1407>
- Khan, M., Ahmad, M., Alidjonovich, R. D., Bakhriddinovich, K. M., Turobjonovna, K. M., & Odilovich, I. J. (2025). The impact of cultural factors on digital marketing strategies with Machine learning and honey bee Algorithm (HBA). *Cogent Business and Management*, 12(1). Scopus. <https://doi.org/10.1080/23311975.2025.2486590>
- Khurshid, M. R., Manzoor, S., Sadiq, T., Hussain, L., Khan, M. S., & Dutta, A. K. (2025). Unveiling diabetes onset: Optimized XGBoost with Bayesian optimization for enhanced prediction. *PLoS ONE*, 20(1 January). Scopus. <https://doi.org/10.1371/journal.pone.0310218>
- Lai, S., Xu, H., Lin, S., Luo, Y., Zou, F., & Liao, L. (2025). Expressway Network Topology Structure Dynamic Generation Method Based on Vehicle Trajectory Information. *Jiaotong Yunshu Xitong Gongcheng Yu Xinxin/Journal of Transportation Systems Engineering and Information Technology*, 25(1), 212–220. Scopus. <https://doi.org/10.16097/j.cnki.1009-6744.2025.01.020>
- Liu, J., Wu, X., Liu, S., & Gong, S. (2025). Model-agnostic counterfactual explanation: A feature weights-based comprehensive causal multi-objective counterfactual framework. *Expert Systems with Applications*, 266. Scopus. <https://doi.org/10.1016/j.eswa.2024.126063>
- Liu, Z., & Xiang, Q. (2025). F-F Diagram: A Two-Dimensional Surrogate Safety Indicator Based on Field Theory for Lane Change Risk Assessment. *IEEE Transactions on Intelligent Transportation Systems*. Scopus. <https://doi.org/10.1109/TITS.2025.3547969>
- Malode, S. J., Alshehri, M. A., & Shetti, N. P. (2025). Revolutionizing human healthcare with wearable sensors for monitoring human strain. *Colloids and Surfaces B: Biointerfaces*, 246. Scopus. <https://doi.org/10.1016/j.colsurfb.2024.114384>
- Mensah, A., Bao, Q., Zhang, Z., Chen, Y., Jiang, Q., & Cai, P. (2025). Symbioperpersonal intelligence towards symbiotic and personalized digital medicine. *Fundamental Research*. Scopus. <https://doi.org/10.1016/j.fmre.2025.01.009>
- Olawade, D. B., Marinze, S., Qureshi, N., Weerasinghe, K., & Teke, J. (2025). The impact of artificial intelligence and machine learning in organ retrieval and transplantation: A comprehensive review. *Current Research in Translational Medicine*, 73(2). Scopus. <https://doi.org/10.1016/j.retram.2025.103493>
- Onwuchekwa, J. I. D., Weber, C., & Maleshkova, M. (2025). Enhancing Hypoglycemia Prediction in Type 1 Diabetes Through Semantic Knowledge Integration and Machine Learning Optimization. Dalam Meroño Peñuela A., Corcho O., Groth P., Simperl E., Tamma V., Nuzzolese A., Poveda-Villalón M., Sabou M., Presutti V., Celino I., Revenko A., Raad J., Sartini B., & Lisena P. (Ed.), *Lect. Notes Comput. Sci.: Vol. 15345 LNCS* (hlm. 33–44). Springer Science and Business Media Deutschland GmbH; Scopus. https://doi.org/10.1007/978-3-031-78955-7_4
- Parimala, S., Iram, F., Kishore, G., Sivaraman, R., Srimathi, S., & Jegajothi, B. (2025). Personalized Deep Brain Stimulation Parameter Optimization using Deep Learning with Dimensionality Reduction and Data Augmentation. *Int. Conf. Intell. Syst. Comput. Networks, ICISCN*. International Conference on Intelligent Systems and
-

-
- Computational Networks, ICISCN 2025. Scopus. <https://doi.org/10.1109/ICISCN64258.2025.10934327>
- Pedersen, S. M., Damslund, N., Kjær, T., & Olsen, K. R. (2025). Optimising test intervals for individuals with type 2 diabetes: A machine learning approach. *PLoS ONE*, 20(2 February). Scopus. <https://doi.org/10.1371/journal.pone.0317722>
- Qamar, T., Ansari, M. S., & Mukherjee, S. (2025). MicroRNAs as Biomarker in Rheumatoid Arthritis: Pathogenesis to Clinical Relevance. *Journal of Cellular Biochemistry*, 126(2). Scopus. <https://doi.org/10.1002/jcb.30690>
- Ramkumar, M. V., Mirudula Shri, M., Gowthaman, S. P., & Subhashini, J. (2025). Crop Care AI: The Smart Farming Revolution. *Proc. Int. Conf. Multi-Agent Syst. Collab. Intell., ICMSCI*, 1097–1102. Scopus. <https://doi.org/10.1109/ICMSCI62561.2025.10893975>
- Sayed, A. N., Bensaali, F., Himeur, Y., Dimitrakopoulos, G., & Varlamis, I. (2025). Enhancing building sustainability: A Digital Twin approach to energy efficiency and occupancy monitoring. *Energy and Buildings*, 328. Scopus. <https://doi.org/10.1016/j.enbuild.2024.115151>
- Shuwei, L. (2025). Indoor energy conservation and intelligent elderly care rehabilitation based on ambient light sensing in the Internet of Things. *Thermal Science and Engineering Progress*, 59. Scopus. <https://doi.org/10.1016/j.tsep.2025.103289>
- Suryawanshi, V., Bhojar, V., Kanyal, D., & Sabale, S. (2025). The role of AI in enhancing hospital operational efficiency and patient care. *Multidisciplinary Reviews*, 8(5). Scopus. <https://doi.org/10.31893/multirev.2025153>
- Wei, G., & Yi, L. (2025). Predicting the impact of yoga on chronic venous insufficiency: A machine learning approach using Naive Bayes classifier and optimization systems. *Journal of Ambient Intelligence and Humanized Computing*, 16(1), 109–131. Scopus. <https://doi.org/10.1007/s12652-024-04889-6>
- Xia, J., Wu, M., & Li, P. (2025). SFML: A personalized, efficient, and privacy-preserving collaborative traffic classification architecture based on split learning and mutual learning. *Future Generation Computer Systems*, 162. Scopus. <https://doi.org/10.1016/j.future.2024.107487>
- Yan, H., Zhu, X., Liu, Y., Qiu, J., & Hu, X. (2025). RLSTSVM: A Robust Prediction Method for Pancreatic Postoperative Complications. *IEEE Access*, 13, 44123–44134. Scopus. <https://doi.org/10.1109/ACCESS.2025.3530468>
- Yang, T., Xu, Z., Ji, S., Liu, G., Li, X., & Kong, H. (2025). Cooperative optimal dispatch of multi-microgrids for low carbon economy based on personalized federated reinforcement learning. *Applied Energy*, 378. Scopus. <https://doi.org/10.1016/j.apenergy.2024.124641>
- Yuksel Elgin, C. (2025). Democratizing Glaucoma Care: A Framework for AI-Driven Progression Prediction Across Diverse Healthcare Settings. *Journal of Ophthalmology*, 2025(1). Scopus. <https://doi.org/10.1155/joph/9803788>
- Zeng, F., Xing, C., & Song, X. (2025). Optimizing educational dynamics: A big data approach to tailored teaching and enhanced student management. *Journal of Computational Methods in Sciences and Engineering*. Scopus. <https://doi.org/10.1177/14727978251322294>
- Zhang, H., & Leong, W. Y. (2025). Industry 5.0 and personalised education: Application of intelligent technology in the optimisation of vocational education resources and improvement of teaching methods. Dalam *Ind. 5.0: Des., Stand., Tech. And Appl.*
-

For Manuf. (hlm. 373–414). Institution of Engineering and Technology; Scopus.
https://doi.org/10.1049/PBME026E_ch18

Zhang, L. (2025). Research on Smart Leisure Venue Management Systems Driven by the Internet of Things. Dalam Jesus I.S. & Wang K. (Ed.), *Adv. Transdiscipl. Eng.* (Vol. 66, hlm. 382–387). IOS Press BV; Scopus.
<https://doi.org/10.3233/ATDE241384>

Copyright Holder :

© Markus Oci et al. (2025).

First Publication Right :

© Al-Hijr: Journal of Adulearn World

This article is under:

