

## Research on the Relationship between the Development of Artificial Intelligence Technology and the Change of Education Goals

Nor Asniza Ishak<sup>1</sup>, Chuan Xing Jiang<sup>2</sup>

Submitted: 06/06/2022 Accepted: 10/09/2022

**Abstract:** The future of education is inextricably linked to advances in new technologies and the computing capabilities of new intelligent machines. In this study, we are going to research on the relationship between the development of artificial intelligence technology and the change of education Goals. This paper investigates the phenomenon of the emergence of AI in teaching and learning in changes of education goals. It looks into facilitate a better understanding of emerging technologies on how students learn as well as how institutions teach and evolve. Recent technological breakthroughs and the increasing speed with which new technologies are being adopted in education are investigated in order to forecast the future purpose of teaching in a world where AI is incorporated in the universities. The study identify some challenges for educational institutions and student learning in the implementation of technology for teaching, learning, and administration. The study proposed remote supervision algorithm for analyzing the relationship between the enhancement of artificial intelligence and change of education goals. The results proved that the suggested algorithm outperforms better than the existing algorithms.

**Keywords:** Education, artificial intelligence, teaching and learning, remote supervision algorithm

### Introduction:

In recent years, the educational sector has also attracted a great deal of interest from the AI application community. The use of information and communication technologies in the classroom is highlighted as a major trend in recent years. The use of AI in classrooms is on the rise, and the field is happy to have it. From 2018 to 2022, the Horizon research predicts, artificial intelligence applications would grow by 43% [1]. The same group's analysis forecasts significantly more widespread use of AI systems than was previously observed. It is undeniable that AI plays an integral future role in the field of education. The field of education has generally embraced the arrival of AI, although many educators still lack a basic understanding of the term [2]. Artificial intelligence (AI) will eventually find its way into the classroom, and there are already tools available to help teachers use AI to their advantage. The role of AI in classrooms is yet unclear. Artificial intelligence (AI) refers to the subfield of machine learning that develops software with the ability

to recognise patterns, make predictions, and learn new patterns or make decisions without human intervention. That is to say, it is equipped with situational awareness and may adapt its responses accordingly, something that wasn't possible in its original design. The goal-oriented behaviour that AI creates is the result of the work of its rational agents [3]. The phrase "rational agent," which has been used in fields such as game theory, economics, and decision theory, etc., describes a person who knows what they want and acts in a way that maximises their chances of getting that thing. Collaboration and engagement, studies have proven, are essential to the learning process. In the realm of education, AI has mostly manifested as three types of tools: individual instructors, group study, and digital environments. Moderating online discussions is important [4]. Intelligent VR could replace the need for teachers, facilitators, etc. in remote virtual labs while keeping students actively engaged in a game-based learning environment that is both immersive and trustworthy. Artificial intelligence (AI) can be utilised in assessment, particularly in cases when there is a great

<sup>1</sup> School of Educational Studies, Universiti Sains Malaysia, Malaysia

<sup>2</sup> School of Educational Studies, Universiti Sains Malaysia, Malaysia

<sup>1</sup> Email: asnizaishak@usm.my

<sup>2</sup> Email: jiangchuanxing@student.usm.my

<sup>1</sup> Corresponding author: Nor Asniza Ishak

amount of student data, and it can also aid in the teaching and learning process through virtual classrooms. In contrast to the time-consuming stop-and-test method, it can provide immediate input and evaluation [5]. Students' academic progress can be tracked and studied over time using AI-powered programmes. Predicting students' grades, their likelihood of completing assignments, and their overall academic performance may all be done with the use of algorithms built into the system. AI has tremendous potential to improve classroom instruction [6]. This study focus on evaluating the development of artificial intelligence in changing the education goals.

### **Related Work:**

Organizations in the education industry that want to keep up with the rest of the modern, advanced world will need to integrate AI technologies for use in teaching and learning [7]. AI can be implemented in educational institutions in a manner that best serves their needs and goals. Along with supervision, process control, and optimization, AI has a significant role to play in the classroom with its intelligent approaches to tutoring, communication, analysis, assessment, and evaluation [8]. There is no longer any need for a classroom or an instructor because AI does everything. The user-side language and context must make sense to the technology. The role that AI plays in the classroom is crucial. This introduces cutting-edge tools and strategies into conventional classroom practice [9]. With its help, academics from many fields can collaborate on studies of a larger range of educational concerns. It's obvious that AI and its function in education span academic boundaries, and that many problems beyond the purview of conventional education may be easily handled by applying AI. For instance, if students have access to the necessary AI technology to teach them or communicate with them in accordance with the teaching or learning objectives, then they can access learning from a location where they do not have access to actual classrooms in a real environment [10]. When AI is applied in the classroom, barriers of time and place are eliminated. In a similar vein, artificial intelligence can streamline the enrollment process for schools and universities so that they can accept as many students as they need, regardless of where they are located. Instead of treating every student the same, AI systems can tailor their interactions with each student based on their unique set of circumstances [11]. Learners can tailor their course selections to their own skill sets, and the AI system will remember this information for future interactions with the learner. Again, tension and pressure are counterproductive to learning, and students in virtual classes feel at ease talking to computers. There is no limit on the number of students that can sign up for the event. Each student's individual expertise and interests will be taken into account by the

machine. The intelligent system will independently carry out duties such as grading, taking attendance, checking homework, etc. To sum up, artificial intelligence (AI) is just one sort of modern technology that is having an impact on the educational industry. The application of AI to the classroom can solve many problems that have no alternative solution [12]. Some of these include a lack of qualified instructors, inappropriate material being taught, and limited access to classrooms. Closing schools because to the COVID-19 outbreak is a major illustration of this. In numerous ways, the incorporation of AI technology has benefited the industry. There is consensus on the importance of artificial intelligence, and early results from this technology point to its success in meeting this challenge.

Due in large part to the COVID pandemic, AI has taken on an ever larger role in the classroom. Possibly, the education sector has been an amplifying factor in the rate of AI implementation and acceptance [13]. Artificial intelligence (AI) has multiple functions in the classroom, including facilitating access and fostering better lines of communication between educators and their pupils. It has altered the norms of classroom instruction by making it possible to tailor lessons to each individual student based on their prior knowledge, learning style, and course objectives [14]. When compared to the conventional approach, continuous analysis of each student's learning history is used to identify areas for improvement and address gaps in education. Tutoring is another important application of AI in the classroom. AI's many tools and applications, like as chatbots and SR, make it possible for it to function as an instructor. It's a way for pupils to get assistance outside of the classroom. Many teachers who don't have much spare time have benefited from AI because it makes their jobs easier. What this means is that students can learn from any location at any time to compensate for their own learning gaps [15]. Finally, the problem of delayed responses has been addressed by AI. It can help alleviate the stress of waiting around by providing instantaneous answers to frequently asked questions. As a result, students and information seekers can spend less time waiting in line and more time learning, while teachers and administrative staff can focus on more complex issues and ask fewer questions. Its ability to serve any audience wherever is arguably its greatest strength. To put it another way, anyone, anywhere, with access to the internet and the necessary technology, can take use of any number of educational services of interest, whenever and however they like. Accessibility, health, the environment, and other barriers to education have all been removed because of (Artificial Intelligence Assistants) AIAs. Summary: Artificial intelligence's primary functions in the classroom include the automation of administrative and instructional tasks, the personalization of instruction, the creation of intelligent content, the

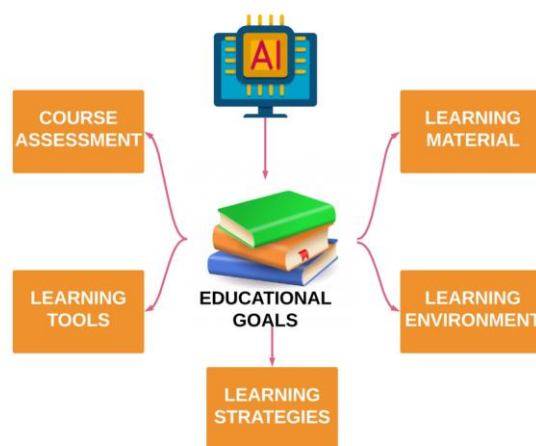
availability of this material around the clock, and the provision of greater access to it. There is also a detrimental impact of AI on the classroom [16]. Learning through AIA reduces students' and teachers' face-to-face contact and denies them the opportunity to learn in the real world. As the most significant flaw, it is clear that this area need additional research.

There are two main sources of stress in the classroom: schoolwork and bureaucratic red tape. In addition to helping the relevant teams and divisions, AIA also offers automated answers to many of the problems that arise. Artificial intelligence tools are now being used by admissions and record keeping departments to lighten their workloads [17]. Similarly, AI is assisting faculty with the likes of assignment checking, exam grading, attendance keeping, and record keeping. Both types of challenges have been addressed through task automation and intelligent teaching. Challenges for students include meeting them where they are intellectually and providing them with an education that is accessible [18]. In response to both of these concerns, AIA has made its educational resources available around the clock, seven days a week. Based on the results of this assessment and analysis, AI systems tailor their instruction to each individual student's needs and interests.

### Materials and Method:

To execute activities and solve issues typically requiring human intelligence, artificial intelligence (AI) refers to the study of, and the development of, computer programmes that can do so without human intervention. Computer programmes now have the intelligence and capability to perform activities that formerly required human intellect, such as visualising complex data, recognising human speech, making complex decisions, and translating between languages. AI and the algorithms that power it were both developed by humans. There's no denying that people programmed the computer's ability to learn, adapt, and expand its capabilities. When compared with artificial intelligence, human beings have considerably higher abilities in areas such as multitasking, memory, interpersonal interactions, and self-awareness. In contrast to human intelligence, artificial intelligence does not have an IQ. The purpose of artificial intelligence (AI) is to supplement human abilities and to help humans make difficult decisions with far-reaching consequences. As far as the technical details go, you've got it right. From a philosophical perspective, AI might help people lead more productive lives without the need for manual work, and it could also help us manage the intricate relationships between people, organisations, and nations. Each student might have their own one-of-a-kind educational experience with the help of machine learning in the classroom. Students are self-motivated, have control over their learning, and can select topics of interest.

When a student and their teacher or other knowledge source are separated geographically, they are said to be engaging in remote learning. Information is disseminated using technological means such as online discussion boards, video conferencing, and electronic tests. The term "adaptive learning" pretty much explains itself. It evaluates a student's progress in real time and adjusts the lesson plan and materials accordingly. Having a more individual focus and tailoring instruction to each student's needs can help everyone learn more effectively. As such, ML could be used to enhance the administration of educational materials. It's helpful for delegating tasks and gauging individual contributions. This helps both the teacher and the student zero in on the ideal method of working together. This is where machine learning shines most as a practical tool. The flexibility and customization it offers make it ideal for meeting specific requirements. By using this method of instruction, students are given the freedom to chart their own educational course. They are afforded the freedom to determine their own educational path and focus.



**Figure 1-** Figure representing AI in Educational Goals

The desired knowledge, abilities, and character traits attained by the end of a study programme are the educational objective. Typical steps include articulating desired outcomes, narrowing them down to more manageable intermediate targets, and finally developing a plan to bring about the desired outcomes. The achievement of academic goals is crucial. Your child will learn valuable social, emotional, and social-emotional skills, as well as self-awareness and confidence, as he or she sets and monitors goals. In order to advance in one's career, it's important to establish some objectives. There has always been a vital role for technology in education, but with the broad availability of cellphones and online curriculum, its use is more pervasive than ever before. The application of artificial intelligence (AI) in schools has led to a proliferation of innovative approaches to teaching and learning. Students may soon have the option of using artificial intelligence (AI)-powered instructional software, and chatbots are there to help them along the way. Using

tablets or laptops, kids can interact with bots designed to help them learn about certain subjects like math or reading. Virtual reality (VR) is a cutting-edge technology that has already proven useful in a variety of educational contexts, from classroom training to helping students improve their math abilities. When using a VR headset, users are transported into a computer-generated, three-dimensional space. VR teachers are trying out new approaches to teaching, redefining what it means to be a student in the process. Virtual reality is a great resource for fostering a sense of community amongst pupils. With the use of an answer key, AI can grade exams, compile data on student performance, and even evaluate more subjective tests. Learning with AI makes students feel safe enough to make the inevitable mistakes that are important for growth. Learning resources enabled by AI can be accessed by students anywhere, anytime. Every student progresses at their own pace, and they can try out different approaches whenever they like without waiting for their teacher to be available. Moreover, students from all over the world have access to high-quality education at no additional cost for either transportation or lodging. The goal of this investigation into educational goals is to better understand how educational institutions may maintain their informational offerings throughout the academic year by adapting their methods of instruction to the rapidly growing field of online education. In this research, we analysed students' perspectives on online education, their capacity for knowledge retention, and their engagement with artificial intelligence-powered learning systems. For this online poll, we employed a questionnaire with a decent level of organisation. A total of 6,000 students from various universities provided the research.

### Remote Supervision Algorithm:

Machine learning is the study of algorithms that can be used to improve user experiences automatically (ML). Machine learning algorithms are a type of AI that can predict or make decisions without being explicitly programmed. These algorithms use training data to build a model. Machine learning algorithms have many practical uses, such as spam filtering and image recognition. Because it is challenging or impossible to construct conventional algorithms to carry out the necessary duties, a multiple-study algorithm was developed to improve the quality of training and pedagogical algorithms.

$a = (a_1, a_2, \dots, a_n)$  represents the observation-mean. In the equation below, the similarity here between  $a$  because database of university students with in  $\|a\|$  was established.

$$\|a\| = \sqrt{a_1^2 + a_2^2 + \dots + a_n^2} \quad (1)$$

It  $\delta$  is necessary to specify the functional derivatives with respect to  $a$  function believed to be a variable and also the independent, whereas other functions remain unaffected.

$$a = [(Ta - \delta)/\omega] \quad (2)$$

It  $\omega$  stands for the first limitation ordinal and is represented by this symbol. Its significant  $\omega$  variety of environment percentages signifies and identifies it.

The idea of tasks for education goal systems, education goals, has been obfuscated by  $a = (a_1, a_2)$ .

$$a = \frac{Ta - \bar{T}s}{aF} \quad (3)$$

$\bar{T}s$  denotes the direction of the vector plus the mean.

$aF$  is an example of standard deviation.

The is made up of random examples.

Here,  $w$  the role of human need has become muddled.

$$w = \left[ \frac{a_1}{\|a\|}, \frac{a_2}{\|a\|} \right] \quad (4)$$

As a result, the direction  $\bar{T}s$  vector could also be expressed as:

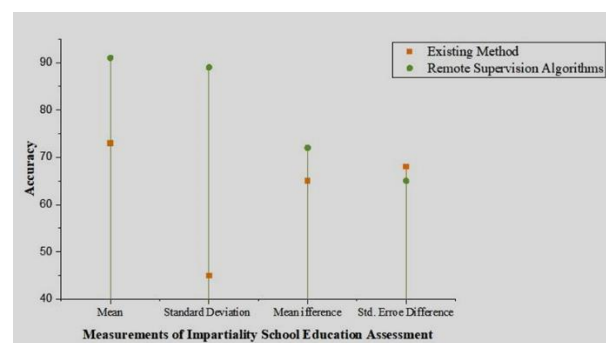
$$a_i = \beta_0 + \beta_1 T a_i + \varepsilon_{o_i} \quad (5)$$

We could see that  $\cos(\theta) = \frac{a_1}{\|a\|}$  and  $\cos(\alpha) = \frac{a_2}{\|a\|}$  are same. As a result, the orientation vector  $w$  can be expressed as follows:

$$w = (\cos(\theta), \cos(\alpha)) \quad (6)$$

### Result and Discussion

This study looked into students' perceptions of online education, their general information-processing skills, and their use of education goals learning systems. The query for this online survey was somewhat open-ended. Six thousand college students contributed data.



**Figure 2-** Quality Education Goals Assessments Performance Analysis and Measurements of Impartiality

In the performance analysis for such a neutral school measuring test, the mean, standard error of the mean, variance of the mean, and difference std. deviation difference values are all specified. The educational goals

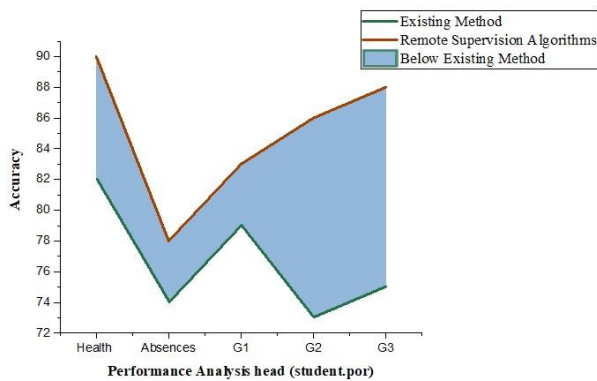
of the inquiry are to determine which of two Remote Monitoring Algorithms is superior (refer figure 2).

**Table 1:** Measurements that are not biased Goals of Education Assessment

Parameters	Group	Mean	N	Mean	S. D.	Std. Error Difference	Mean Difference
online environment	School	3.80	362	3.95	3.66	0.75	-0.85
Online established learning/teaching	School	4.75	424	4.75	2.87	0.44	-0.39
Platform practice	School	3.31	407	3.31	2.94	0.33	0.08
Platform effectiveness	School	4.33	396	4.33	3.62	0.35	-0.53

The proportion of students is N, and the difference in educational goals among students is difference in the education.

Despite the challenges, students believe that traditional face-to-face technique is the ideal thing to transport out the complete teaching-learning process, and that the network will be utilised as a supplement to help them achieve their educational goals. As a result, 69.32% of students prefer face-to-face teaching/learning, 69.46% prefer a balance of offline and online courses, but also 19.73% prefer various websites learning/teaching (refer table 1).



**Figure 3-** Head of Performance Monitoring

The set goals can be better assessed with the use of an E-learning framework. According to the results, 94% of students agree that using Remote Supervision Algorithms in K-3 classes with a single dataset is a good concept. The present performance study favours a hybrid model of offline and online classrooms using Remote Supervision Algorithms, with 82% of respondents favouring this model and 18% opposed (refer Figure 3).

Using Remote Supervision Algorithms with Optimization, we are able to not only analyse data for deep learning but also change and analyse the most crucial data in order to extract a crucial facet of information. Even while data processing appears to be getting better and better and the amount of available information is

relatively big, it is still difficult for deep learning models to 333characterize patterns from data.

**Table 2:** Analysis of the Results Teaching statistics include median scores along with disparities in educational aims

Student	Remote Supervision Algorithms		
	Performance Analysis (%)		
	Time(s)	Frequency	Accuracy (%)
Teaching education goals Recognition	4.6	0.925	97
Training education goals Recognition	4	0.847	85
Learning education Context	3.5	0.963	79
Effect of education Class Room	3.9	0.865	68

Education is viewed as the most essential aim by students, but they also value the goals of direction, growth, recognition, comprehension, sharing, and teamwork. Behavioral product evaluation is the foundation for students' efficiency frameworks. Disparities in democratic education data and the median score from an efficacy analysis has been evaluated. Findings suggest that Remote Supervision Algorithms that combine optimization with DL techniques achieve the best outcomes (refer table 2).

**Conclusion:**

Education is only one industry that has been impacted by AI. It's a modern approach to instruction that can solve a

wide range of problems with education. As a result, problems like limited access to materials and insufficient classroom space where individual students are not negatively impacted by their peers can be addressed. The education sector will inevitably adopt and apply AI. In addition to smart learning, tutoring systems, and social robots, the field also benefits greatly from other forms of artificial intelligence, such as the virtual facilitator, online learning environments, learning management systems, and learning analytics. This study proposed remote supervision algorithm for determining the performance. The study results proved that the suggested algorithm works better than existing algorithms.

## References

- [1]. G. Navarro C, "Relationship Between Artificial Intelligence and the Engagement Variable," *Journal of Psychological Science and Research*, no. 3, 2021, doi: 10.53902/jpsr.2021.01.000515.
- [2]. Y. A. Rahma, C. C. Chia, and R. M. A. Wadi, "The Contribution of Information and Communications Technology in the Sustainable Development Goals," in *Applications of Artificial Intelligence in Business, Education and Healthcare*, Springer International Publishing, 2021, pp. 443–469.
- [3]. E. Bryzgalina, "Artificial Intelligence in Education. Analysis of Implementation Goals," *Chelovek*, no. 2, p. 9, 2021, doi: 10.31857/s023620070014856-8.
- [4]. D. E. de Lange, "Responsible Artificial Intelligence and Partnerships for the Goals," in *Encyclopedia of the UN Sustainable Development Goals*, Springer International Publishing, 2021, pp. 1032–1044.
- [5]. Pepsi M, B. B. ., V. . S, and A. . A. "Tree Based Boosting Algorithm to Tackle the Overfitting in Healthcare Data". *International Journal on Recent and Innovation Trends in Computing and Communication*, vol. 10, no. 5, May 2022, pp. 41-47, doi:10.17762/ijritcc.v10i5.5552.
- [6]. F. Sun, "Research on the Relationship between Artificial Intelligence Technology and Computer Data Processing," *Journal of Physics: Conference Series*, no. 4, p. 042046, Apr. 2020, doi: 10.1088/1742-6596/1533/4/042046.
- [7]. H.-H. Goh and R. Vinuesa, "Regulating artificial-intelligence applications to achieve the sustainable development goals," *Discover Sustainability*, no. 1, Nov. 2021, doi: 10.1007/s43621-021-00064-5.
- [8]. B. Quadir, M. Chang, and J. C. Yang, "Categorizing learning analytics models according to their goals and identifying their relevant components: A review of the learning analytics literature from 2011 to 2019," *Computers and Education: Artificial Intelligence*, p. 100034, 2021, doi: 10.1016/j.caeai.2021.100034.
- [9]. Ahmed Cherif Megri, Sameer Hamoush, Ismail Zayd Megri, Yao Yu. (2021). Advanced Manufacturing Online STEM Education Pipeline for Early-College and High School Students. *Journal of Online Engineering Education*, 12(2), 01–06. Retrieved from <http://onlineengineeringeducation.com/index.php/joe/article/view/47>
- [10]. K. Neuerburg, "Applications of Artificial Intelligence in Achieving Development Goals," *The International Journal of Technology, Knowledge, and Society*, no. 1, pp. 35–47, 2022, doi: 10.18848/1832-3669/cgp/v18i01/35-47.
- [11]. D. E. de Lange, "Responsible Artificial Intelligence and Partnerships for the Goals," in *Encyclopedia of the UN Sustainable Development Goals*, Springer International Publishing, 2020, pp. 1–13.
- [12]. Kumari, S. S. ., and K. S. . Rani. "Big Data Classification of Ultrasound Doppler Scan Images Using a Decision Tree Classifier Based on Maximally Stable Region Feature Points". *International Journal on Recent and Innovation Trends in Computing and Communication*, vol. 10, no. 8, Aug. 2022, pp. 76-87, doi:10.17762/ijritcc.v10i8.5679.
- [13]. H. Yang, "Explore How Artificial Intelligence and VR Technology will Change the Development of Future Education," *Journal of Physics: Conference Series*, no. 4, p. 042146, Feb. 2021, doi: 10.1088/1742-6596/1744/4/042146.
- [14]. Perez, S.; Massey-Allard, J.; Butler, D.; Ives, J.; Bonn, D.; Yee, N.; Roll, I. Identifying productive inquiry in virtual labs using sequence mining. In *Artificial Intelligence in Education*; André, E., Baker, R., Hu, X., Rodrigo, M.M.T., du Boulay, B., Eds.; Springer: Cham, Switzerland, 2017; Vol. 10331, pp. 287–298.
- [15]. Chiba, Z., El Kasmi Alaoui, M. S., Abghour, N., & Moussaid, K. (2022). Automatic Building of a Powerful IDS for The Cloud Based on Deep Neural Network by Using a Novel Combination of Simulated Annealing Algorithm and Improved Self- Adaptive Genetic Algorithm. *International Journal of Communication Networks and Information*



- Security (IJCNIS), 14(1).  
<https://doi.org/10.17762/ijcnis.v14i1.5264>
- [16]. Bahadır, E. Using Neural Network and Logistic Regression Analysis to Predict Prospective Mathematics Teachers' Academic Success upon Entering Graduate Education. *Educ. Sci. Theory Pract.* Vol.16, pp.943–964, 2016
- [17]. Duran-Sanchez, A.; Alvarez-Garcia, J.; Del Rio-Rama, M.; De La, C.; Sarango-Lalangui, O. Analysis of the scientific literature published on smart learning. *Espacios*, vol. 39, no.57, pp.14–27, 2017
- [18]. Gupta, D. J. . (2022). A Study on Various Cloud Computing Technologies, Implementation Process, Categories and Application Use in Organisation. *International Journal on Future Revolution in Computer Science & Communication Engineering*, 8(1), 09–12.  
<https://doi.org/10.17762/ijfrcsce.v8i1.2064>
- [19]. Lee, J.-E.; Lim, D.; Um, G. A cyber engineering education strategy based on smart learning. *Information* vol.18, pp.1169–1174, 2015
- [20]. Chen, N.S.; Cheng, I.L.; Chew, S.W. Evolution is not enough: Revolutionizing current learning environments to smart learning environments. *Int. J. Artif. Intell. Educ.* vol.26, pp.561–581, 2016
- [21]. Paithane, P. M., & Kakarwal, D. (2022). Automatic Pancreas Segmentation using A Novel Modified Semantic Deep Learning Bottom-Up Approach. *International Journal of Intelligent Systems and Applications in Engineering*, 10(1), 98–104.  
<https://doi.org/10.18201/ijisae.2022.272>
- [22]. J. Su and W. Yang, “Artificial intelligence in early childhood education: A scoping review,” *Computers and Education: Artificial Intelligence*, p. 100049, 2022, doi: 10.1016/j.caeai.2022.100049.
- [23]. W. Yang, “Artificial Intelligence education for young children: Why, what, and how in curriculum design and implementation,” *Computers and Education: Artificial Intelligence*, p. 100061, 2022, doi: 10.1016/j.caeai.2022.100061.
- [24]. X. Chen, H. Xie, D. Zou, and G.-J. Hwang, “Application and theory gaps during the rise of Artificial Intelligence in Education,” *Computers and Education: Artificial Intelligence*, p. 100002, 2020, doi: 10.1016/j.caeai.2020.100002.
- [25]. Satish, A. B. ., & Rechanna, D. (2022). An Empirical Study on the Impact of HRD Practices on NPOs in Utilizing Foreign Contributions Received. *International Journal of New Practices in Management and Engineering*, 11(01), 01–14.  
<https://doi.org/10.17762/ijnpme.v11i01.143>