

Development of Virtual Assistance Strategy for Students Using Blockchain and Artificial Intelligence Framework

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Abstract

The education sector is important and continuously upgrades in all aspects. Some essential needs are learning materials, teacher involvement, and student potential to use the resources for better knowledge gain. In a post-pandemic scenario, looking back at pandemic situations, educational reformation took place quickly. Virtual training, virtual laboratories, and online educational facilities must provide flexible training to students, working professionals, and corporate certifications to stay current in this technological era. Hence, this paper presents the virtual assistance strategy using artificial intelligence and blockchain to schedule various tasks at the convenience of the learner and instructor. The paper also uses quantitative analysis to present the post-research feasibility analysis for the proposed system.

Keywords: Virtual assessment, blockchain, artificial intelligence, task scheduling, flexible training.

1. Introduction

Various researches throughout the previous two decades has discovered that instructor educator professors are essential elements in technology learning, specifically focused on their crucial role as technology function units for pre-service educators. Studies claim that instructor educator proficiency and readiness to employ solutions in educating will boost their modules in the technology-integration procedure even though showing main methods for pre- service instructors [1]. The rising recognition of Virtual Reality (VR) has triggered scholars' and educators' curiosity to look into its possibilities as a learning condition for different areas of education. VR is an essential program in the vernacular classes; however, it requires issues concerning its technological setting and pedagogical grounding [2].

The primary task has proven a need for more top-quality professional development (PD) courses tailored to initial primary teachers to strengthen their expertise and self-efficacy about educating coding in the classes. In contrast to classic PD programs in this section have depended upon in-person training courses, the COVID-19 outbreak necessitated the demand to check out virtual PD versions [3]. The author researched the features of university learners learning innovative contemplating in an online virtual simulation setting, conducted a quantitative investigation of the educational performance of off-line training, and executed in-depth interviews focusing on clients in association with the research results. The author

discovered an approach to determine user interface design and a relationship approach of the virtual simulation training system to strengthen user knowledge in line with the inclination of university students [4].

Augmented Reality (AR) and Virtual Reality (VR) are the current systems that offer an innovative hue to the discipline of education. This analysis reports the usage of AR and VR in teaching, specifically in the coaching and learning procedure. This research is a library study. The evaluation reveals that AR and VR are alternatives for instructors and learners in the instructing and learning procedure [5]. Metaverse is described as a group of technology, devices, and metaverse linked to IoT, Blockchain, Artificial Intelligence, and all the various technology sectors incorporating academics. Precise, the considerable accomplishment of the metaverse in the latest time is in the academics area; the metaverse settled many troubles in the coaching domain. Specifically, in the circumstance of covid-19, citizens persisted, and all the academics virtually applied metaverse systems [6].

New scientific advancements, like 5G networks, intelligent and adjoining gadgets, and the evolution of the Internet of Things (IoT), tweaked to a unique certainty in which the protected circulation of information and facts is non-negotiable. In this new fact, the blockchain concept can perform a critical part, as it can present the vital record for systems' secure and intangible performance [7]. Blockchain technology can restrict many scammers from fetching educating data in other ways, prevent the data insecurity complications outlined by the central data segment, significantly boost the protection of personal security details in the many data sectors, and generate a sensible computation [8].

2. Literature Review

The author planned the rating system using the Ethereum blockchain and its three independent, intelligent contracts. The effectiveness, as well as the feasibility of the structure, was then validated with tests. The ensuing model is remarkable for existing online learning units because it avoids solution tampering. Blockchain standards and a collaborative rating guideline can increase fairness. Ultimately, this model helps control communications among learners and instructors at the time of the approach of informational evaluation and stimulates all on-chain users to count on the online learning method. These kinds of features strengthen peer analysis and self-directed learning that are necessary for student-centered and so collaborative learning conditions [9].

In compliance with the pattern of teaching reform, this paper concentrates on the self-sufficient design of MOOC teaching development, educating, learning, analysis, and uses dynamic blockchain environment, and the formation and execution of MOOC interaction program to examine its development potential [10]. The technique used for this exploration incorporates information evaluation, literature review, content examination (blockchain platforms), the case study approach, and the review approach. In statistical concerns, targeting to measure indications, this research reveals the Compound Dependability Evaluation, Cronbach Alpha Coefficients, and the Bootstrapping approach. Analysts

discovered that blockchain-based tools, as were inspiration, teamwork, and scholar engagement, were crucial elements in enhancing educational learning benefits. The outcomes from the quantitative analysis revealed that collaborative work, inspiration, involvement, MOOCs, AR, VR, and Gamification, as well as, Online classes, were linked with learning effectiveness [11].

The existing online vocabulary learning programs are susceptible and simplistic to be altered by instructors or program executives. Blockchain can offer steadfast and reliable storage support and intelligent computation service. Subsequently, a blockchain-based online vocabulary learning program is suggested in this paper to monitor students' day-by-day analysis and immediately assess their practices to save instructors from tiresome and intricate homework verification workload and present a trustworthy and reputable analysis of students' practices [12]. The author features the strategy of the blockchain concept and expounds on the features and categories of its utility in the domain of teaching in detail. Then merged with the well-known standard utility circumstances of blockchain technology in the higher education domain, the effect and benefit of blockchain technology on higher education are discussed, and likely difficulties are examined. This paper can give a benchmark for developing thorough and solid automated education principles and teaching manners structured on blockchain in China [13].

The approach comprises a business intelligence summation of AI developments and issues of significance to educational organizations focusing on intelligent human-computer interaction and exciting models and production for training engineers for future business. The author also shows a case study that generates 35 years of knowledge in providing AI educational courses in the organization to teach future engineers and understanding staff [14]. The authors examined the current program level of AI in artwork instructing and summed up the complications with these uses. Subsequent, the elementary part of AI in artwork education was examined intimately, and three tactics were planned to encourage AI uses in current art coaching, such as:

- Increasing the versatility of AI-based artwork coaching,
- Strengthening the smart instructing method of artwork coaching, and
- Boosting the creative knowledge and set of AI-based artwork coaching.

Simultaneously, to assess the program impact of AI in artwork coaching, a functionality evaluation model was produced depending on the analytical hierarchy process (AHP) and grey clustering. The recommended model can measure the program influence of AI in artwork coaching, and it has positive program capabilities [15].

3. Research Methodology

Today, artificial intelligence has proliferated to reach almost every wing of daily life, one of the most significant for virtual education. While teaching, insofar as it involves training and

validation, is still mainly a form of art rather than a standard technology, the taking up this elitist job by computers has triggered much debate and controversy involving the teaching community and virtual education. AI and blockchain is a technology that strives to create computers capable of teaching in more flexible ways. Fig. 1 shows the CNN model.

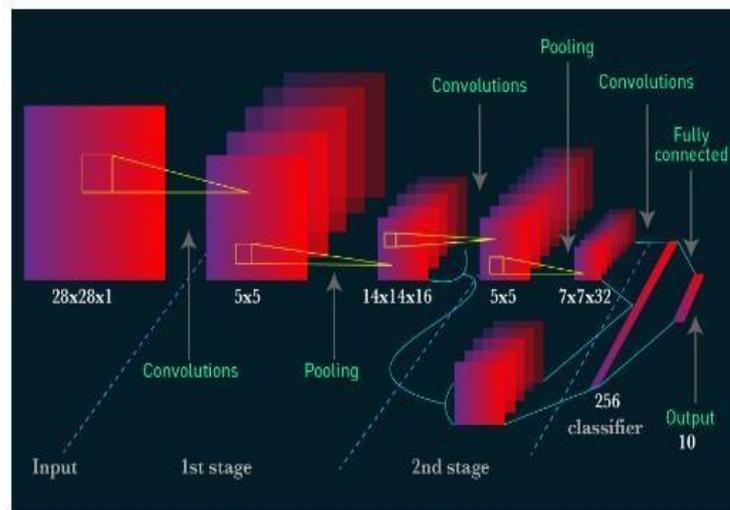


Fig. 1: CNN model for collaboration with blockchain (Source: analyticsindiamag.com)

Fig. 2 shows the proposed methodology for virtual training scheduling using artificial intelligence and blockchain.

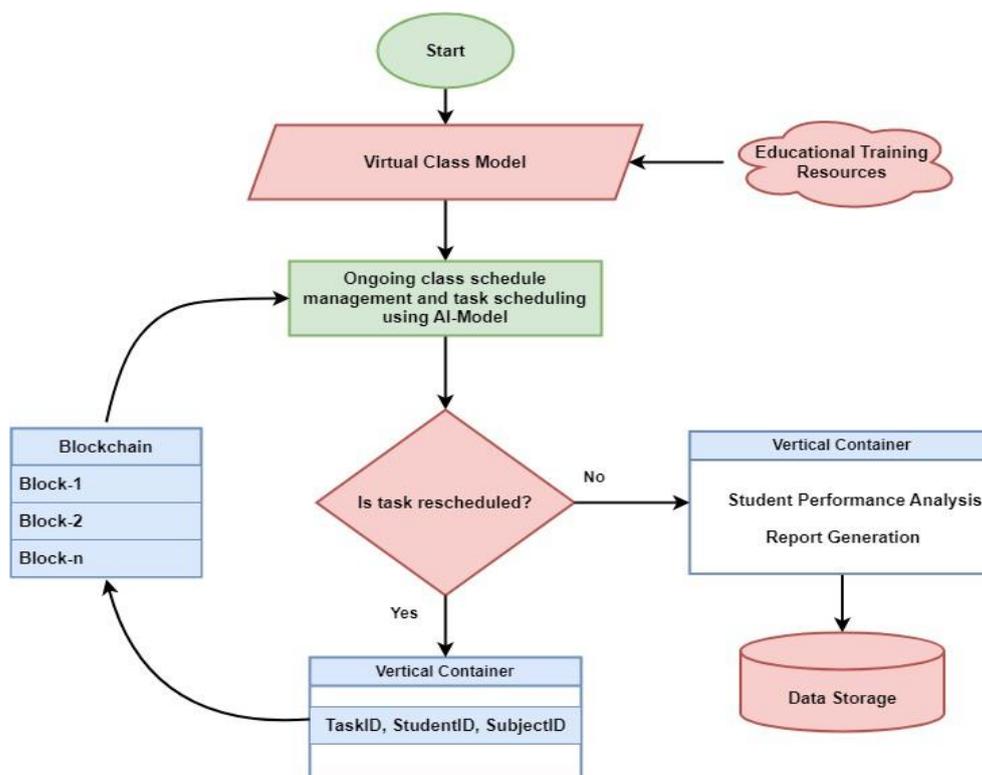


Fig. 2: Proposed Virtual Assistance Methodology

As per the National Education Policy in India, it is necessary to add flexibility to education using online education. As per the proposed virtual assistance method, any virtual class model can opt for an artificial intelligence model to schedule and evaluate students' class work. Task scheduling is always challenging with online education if the students and mentors are at different locations. So, the proposed scheduler can identify the task timeline for each class. In case the class needs re-scheduling, taskID, studentID, and subjectID is fed to the blockchain to identify and schedule a specific block. If the task is completed within the specified timeline, virtual training analysis for a student is automatically delivered and stored. Students and mentors can use the cloud resources for further virtual training. We tested the proposed methodology for feasibility by employing statistical analysis.

Research Design

The traditional scales for measuring virtual training qualities are education, experience, and performance. However, in a modern education era, AI and blockchain helps us to brainstorm with a multitude of virtual entities to fit in the best class.

Primary and Secondary Data:

For the proposed research demographic profiles are targeted from Pune, India region. The primary data is collected from Software experts, project managers and educational analysts, students etc. The secondary data is collected from the reports, white papers, research papers, magazines, newspapers and marketing portals used for the proposed research.

Questionnaire Development:

For the proposed research, closed ended questions are included in form and distributed to participants. Recorded responses are collected and analyzed using IBM SPSS tool for statistical analysis.

Sampling Method:

Random Sampling method is used. Sample size identification is an essential significant stage in the development of a research analysis. Competently sized samples are important to infer with assurance that samples approximated are reflective of base population variables. The sample size needed to reject or accept a study hypothesis is identified.

Table 1: Sample size representation, N=400

Respondent/Data	Sample	Tolerance (%)
Software experts, project managers and educational analysts, students	400	10

In order to develop the virtual assistance team, three core elements are necessary: student as a self-motivated entity, mentors as a thought-sharing entity, and evaluator as a member of the overall system.

4. Result and Analysis

Based on the demographic details, we conducted a reliability test to identify the variables, as shown in Table 2. The alpha value is calculated using the STAT-Pro tool.

Table 2: Proposed study variables

Sr.No	Study Variables	Alpha Value	N
1.	Impact of virtual training	2.56	400
2.	Impact of flexible training	2.28	400
3.	Impact of virtual team work	2.91	400
4.	Impact of Artificial Intelligence model	2.78	400
5.	Impact of blockchain on virtual training and assessments	2.12	400

As per the alpha values calculated and shown in Table 2 above, Cronch's Alpha determined that all variables are more significant than 0.5; the outcomes are reliable. All variables are the most reliable variables. As per the proposed task scheduling and re-scheduling, Fig. 3 shows the generated graph.

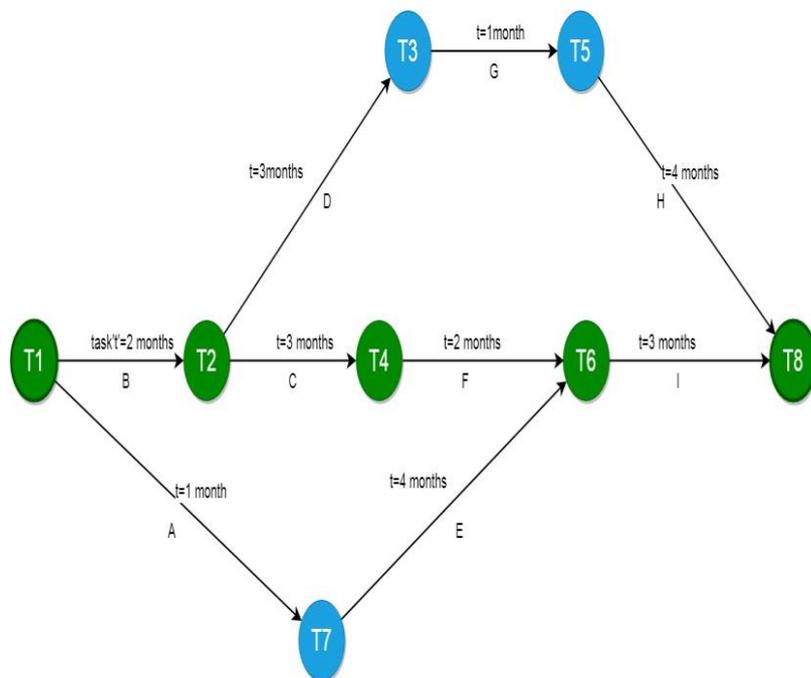


Fig. 3: Proposed system performance representation

As per the outcome, the working professionals are more prone to rescheduling tasks for virtual assistance, whereas the mentor rescheduling is significantly less.

Hypotheses Testing

H0: Artificial intelligence cannot help to make decisions quickly for virtual assistance.

H1: Artificial intelligence can help to make decisions quickly for virtual assistance.

	df	Mean Square	F	Sig.
Between Cluster	8	1.068	1.057	0.003
Within Cluster	392	1.075	-	-
Total	400	-	-	-

Table 10: ANOVA results for artificial intelligence model feasibility test

The result of the significant level is 0.003; hence the positive hypothesis is accepted.

H0: Blockchain cannot be an essential element for decision-making for task rescheduling.

H1: Blockchain can be an essential element for decision-making for task rescheduling.

	df	Mean Square	F	Sig.
Between Groups	3	1.069	1.374	0.002
Within Groups	397	1.174	-	-
Total	400	-	-	-

Table 11: ANOVA results for blockchain task rescheduling

The result of the significant level is 0.002; hence the positive hypothesis is accepted.

As per the data analysis, the study's findings show that artificial intelligence and blockchain can help make decisions quickly for the virtual training domain and task scheduling.

5. Conclusion

As per the proposed model presented in this paper, virtual training can efficiently be used for task scheduling, task performance evaluation and flexible class work for students and working professionals. The virtual laboratories and cloud resource material can be accessible to everyone. The proposed artificial intelligence model and blockchain can provide a tamperproof model for virtual assessments. The proposed model can be used for human resource recruitment and employee training in virtual mode. The convolution neural network can be used for image analysis of cloud resources to match the study material with students' interests.

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