
VIRTUAL LABORATORY INTERACTION WITH ARTIFICIAL INTELLIGENCE

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ABSTRACT

The scope of this paper includes Development of Virtual Intelligent SoftLab with Artificial Intelligence. AI is being used widely in all sectors like education, scientific research and business. Artificial intelligence is the computer programs that can take the decisions based on existing data. Researchers are using artificial intelligence for more accurate and consistent scientific results using Virtual Lab. The virtual laboratories application utilization used by the college students for their experimental work. Laboratory interaction with students is important for practical approach so that students can run virtual laboratory applications at any place according to their requirements and abilities to carry out them anywhere and anytime. Many applications in virtual laboratories are to perform the interactions with students. However, students need interactions to determine which content, tools and modules for the research. In this paper, Artificial Intelligence tools easily solve the Virtual Laboratory concepts and can be easily used by students as well as researchers.

KEYWORDS: Artificial Intelligence, Virtual Lab, Virtual Experiments, SoftLab, Learning Tools.

AI is Transforming Education.

Artificial intelligence is nota concept that is used in computer science but we use itin our everyday lives. AI is continually changing because of new technological concepts developed by experts. It will become an important part of our society used in daily life.

AI is being used widely in all sectors like education,scientific research and business. In this article, we will discuss why artificial intelligence is important in daily experiments and how it can be used in education and what are the roles of artificial intelligence in virtual laboratories.

Its applications can be realised in almost every area of our everyday life, from business to science and education. In this article we focused on how artificial intelligence is used in science experiments, what is the role of artificial intelligence in virtual labs and what is the use of AI in education etc.

What is Artificial Intelligence?

Artificial intelligence is used in an area of computer science that develops giving machines the ability to “think” like humans. Artificial intelligence is the computer programs that can take the decisions based on existing data. So, we can define artificial intelligence as a simulation of the processes of human intelligence given by the machines. Today’s AI has become extremely powerful in data analysis, problem-solving techniques and decision-making system. But, it still lacks human intelligence like common sense. AI system is broadly classified as

- **Narrow AI:** It is a common type of AI that can be found in our daily life. Narrow AI can focus on single task and cannot do any work beyond its limitations.
- **General AI:** It has the capability to understand and learn any task that a human being can do.
- **Super AI:** This type of AI is still a concept. It will exceed human intelligence and can do any task better than a human.

Artificial Intelligence in Education

Artificial intelligence has the potential to teach the students using virtual classroom by providing virtual instruments to the students which increase the efficient learning experiences. There are different techniques in which developers can use artificial intelligence to improve learning outcomes, such as:

- Learning and data analytics.
- Adaptive learning.
- Courses scheduling and Lesson Planning.
- Improve writing skills.
- School and facilities management.
- Learning Management Systems.
- Educational gamification.
- Safety and security.
- Plagiarism detection.

- Academic Research.
- Finance.
- Using Interactive Games for Early Childhood Education.
- Virtual Intelligent SoftLabs.

The Role of Artificial Intelligence in virtual Intelligent SoftLabs

Students learn in universities are familiar with virtual laboratories. Virtual intelligent laboratories are necessary to perform the concept of Virtual Intelligent SoftLab. AI is always used to enhance the quality of learning and transfer of knowledge. Many applications in virtual laboratories are to perform interactions with students. However, students need interactions to determine which content, tools and modules for the research. Laboratory interaction with students is important for practical approach so that students can run virtual laboratory applications at any place according to their requirements and abilities to carry out them anywhere and anytime. For this reason, artificial intelligence in virtual laboratories is needed so students can carry out practices in laboratories that simulate the real laboratories. The virtual laboratories application utilization used by the college students for their experimental work. Students can easily interact effectively and consequently so that the virtual lab can become more smart using AI.

How can AI be used in science experiments?

Artificial intelligence had some success in the real world, but it may not get a full chance to prove itself until science subjects make use of it. Recently, scientists and experts have been testing how AI can be used to help with experiments work in the laboratory. Researchers are using artificial intelligence for more accurate and consistent scientific results using Virtual Lab. The robot works independently 24 hours/day. By using artificial intelligence, the robot has flexible and stronger arms to work continuously. The robot conducts experiments by itself, moves around the laboratory in any risky area, avoiding human associates and also decides for itself which tests to do next depending on previous results. The robot can be able to tackle problems that consume too much time for humans to explore.

Advantages of Artificial Intelligence

- **Increase the Accuracy:** Most important benefit of artificial intelligence is that it can increase accuracy and create zero errors. Artificial Intelligence is based on previously collected information and set of algorithms. AI systems can help organizations and

humans make decisions, faster if they provide the AI machines and systems with all the needed data.

- **24/7 Available:** Artificial intelligence work continuously without any time offs or breaks. They can perform multiple tasks simultaneously with accurate results and reflect much faster than humans. Artificial intelligence algorithms can handle repetitive jobs easily.
- **Digital Assistance:** Advance technology easily communicates with their clients by using digital assistants and they reduce the human interference. Many applications now use digital assistants to answer their clients' questions accurately. For example, chatbot, chat-GPT is more famous for solving difficult problems.
- **No Risks:** One of the prime advantages of artificial intelligence is that humans reduce the risk from the dangerous and risky restrictions that humans face such as bomb disposal, risky circuits narrow pipelines etc.
- **Repetitive Jobs:** Artificial intelligence can efficiently perform any boring tasks for several times. Everyday life activities such as sending emails, making calls, detecting the weather etc. can easily perform by the AI-based apps.

Disadvantages of Artificial Intelligence

- AI requires High Costs for development and maintains.
- AI may increase unemployment because many tasks perform by system than humans.
- AI can't learn to think and it does not have the creativity.
- AI also can make humans lazy and dump to use their brains
- AI is based on existing data available on their memory hence they cannot create new things.
- AI systems are emotionless to take their decisions.

CONCLUSIONS

AI is being used widely in all sectors like education, scientific research and business. Artificial intelligence allows us to create virtual Laboratory as per the existing knowledge. Researchers create and use Virtual SoftLabn using Artificial Intelligence tools. The virtual laboratories used by the students in their regular practical work. So that students can run virtual laboratory applications at any place according to their requirements and abilities to carry out them anywhere and anytime. Many applications in virtual laboratories are to perform interactions with students. However, students need interactions to determine

which content, tools and modules for the research. Artificial Intelligence tools easily solve the Virtual Laboratory concepts and can be easily used by students as well as by researchers.

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