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Education and use of Artificial Intelligence

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Abstract—How can artificial intelligence be used in the education of our children, especially our younger children? This is the question I explored in this project. There are expert systems, simulations, computer assisted instruction, and other technological adaptations in education. But in our education system I found out that this other technology is not being used much, the search itself for artificial intelligence has produced some profound implications for educators and Teachers. That is why researchers going to decide research on the theme Education and Artificial Intelligence. Artificial Intelligence begun looking at public education with a new perspective as to how learning takes place in a society saturated with virtual reality, the Internet, video games, and other such technologies. So, on this new theme of Artificial Intelligence which very closed related with student educator and learner. But I just found that this is much more student knowledge about Artificial Intelligence that is why researcher try to findout the basic knowledge of learner and application of Artificial Intelligence.

I. INTRODUCTION

Computers have been used in education for over 20 years. Computer-based training (CBT) and computer aided instruction (CAI) were the first such systems deployed as an attempt to teach using computers. In these kinds of systems, the instruction was not individualized to the learner's needs.

While both CBT and CAI may be somewhat effective in helping learners, they do not provide the same kind of individualized attention that a student would receive from a human tutor. For a computer based educational system to provide such attention, it must reason about the domain and the learner. This has prompted research in the field of intelligent Tutoring Systems (ITSs). ITSs offer considerable flexibility in presentation of material and a greater ability to respond to idiosyncratic student needs. These systems achieve their ``intelligence'' by representing pedagogical decisions about how to teach as well as information about the learner. This allows for greater versatility by altering the system's interactions with the student.

Intelligent tutoring systems have been shown to be highly effective at increasing students' performance and motivation. For example, students educators using this techniques in teaching skills in statistics in Economics in method of Math interaction with altering the system's interactions with the student. In this paper, we start by providing an overview of the basic components of intelligent tutoring systems.

A. Interaction between Student Educator with Learning Environment

Intelligent tutoring systems may outwardly appear to be monolithic systems, but for the purposes of conceptualization and design, it is often easier to think about them as consisting of several interdependent components. Previous research by Woolf has identified four major components: the student model, the pedagogical module, the domain knowledge module, and the communication module. We have identified a fifth component, the expert model. Woolf includes this component as part of the domain knowledge, but we feel that it is a separate entity. Figure 1 provides a view of the interactions between the modules.

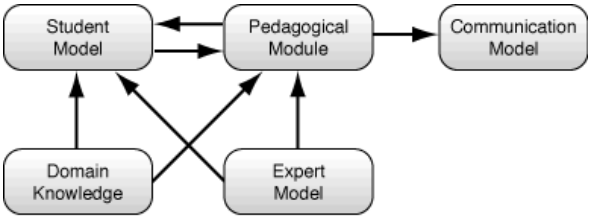

Fig. 1: Interactions of Components in an Intelligent Tutoring System

B. Student Model

The student model stores information that is specific to each individual learner. At a minimum, such a model tracks how well a student is performing on the material being taught. A possible addition to this is to also record misconceptions. Since the purpose of the student model is to provide data for the pedagogical module of the system, all of the information gathered should be able to be used by the tutor.

C. Pedagogical Module

This component provides a model of the teaching process. For example, information about when to review, when to present a new topic, and which topic to present is controlled by the pedagogical module. As mentioned earlier, the student model is used as input to this component, so the pedagogical decisions reflect the differing needs of each student.

D. Domain Knowledge

This component contains information the tutor is teaching, and is the most important since without it, there would be nothing to teach the student. Generally,

it requires significant knowledge engineering to represent a domain so that other parts of the tutor can access it. One related research issue is how to represent knowledge so that it easily scales up to larger domains. Another open question is how to represent domain knowledge other than facts and procedures, such as concepts and mental models.

E. Communications Module

Interactions with the learner, including the dialogue and the screen layouts, are controlled by this component. How should the material be presented to the student in the most effective way? This component has not been researched as much as the others, but there has been some promising work in this area.

F. Expert Model

The expert model is similar to the domain knowledge in that it must contain the information being taught to the learner. However, it is more than just a representation of the data; it is a model of how someone skilled in a particular domain represents the knowledge. Most commonly, this takes the form of a runnable expert model, i.e. one that is capable of solving problems in the domain. By using an expert model, the tutor can compare the learner's solution to the expert's solution, pinpointing the places where the learner had difficulties.

G. Abstraction of the Learning Environment

Many systems attempt to provide instruction by simulating a realistic working environment in which the student can learn the task. There are many reasons for developing such systems, including the possible danger of training using the actual equipment and the lack of domain experts who can devote their expensive time to training novices. Therefore, a realistic simulated learning environment can reduce both the cost and the risks of training.

H. Instructions for Students Educator

There is a long history of classifying instructional goals according to the type of knowledge being taught. An important early attempt at this classification is Bloom's taxonomy and much recent work in categorizing knowledge has been derived from this. In addition to classifying learning goals by knowledge type, one can also examine what the student will be able to do upon completion of the ITS's lesson. This can vary from the student being able to perform a set of skills in a manner similar to an expert to understanding abstract concepts such as Newton's third law.

For ease of development, systems tend to concentrate on teaching one type of knowledge. The most common type of ITS teaches procedural skills; the goal is for students to learn how to perform a particular task. There has been substantial research in cognitive psychology about human skill acquisition, so analyzing the domain knowledge in this framework can prove beneficial to instruction. Systems that are designed according to these principles are often called cognitive tutors.

II. CONCLUSION

In conclusion, other general information about the student's learning can be included, such as acquisition and retention. Acquisition measures how fast students learn new topics, and retention measures how well they recall the material over time. Prior research suggests that examining general factors such as acquisition and retention can be beneficial for student modeling. Work with the LISP tutor and with Stat Lady indicates that general factors extracted from student learning data are predictive of overall learning and allow for a more accurate response to the idiosyncrasies of the student. So, it is very much and must important technique using in Teaching-Learning Process. So, belonging to this process all over education system must be using this AI system because of overall development of every student, Teacher Educator.

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