Abstract

Teaching and learning have been the most important issues from evolution of human race. With the advent of computers to the world of science, researchers have tried to design intelligent tutoring systems to benefit from this technology as a useful tool for teaching and learning. Since each person has a learning style according to his/her personality and with considering the impact of affects in learning process, researchers have tried to use these parameters to personalize learning environment and make it adaptable to the user's needs.

Purposed system is a Student Performance Analysis System(SPAS) that uses Machine Learning techniques to implicitly learn teaching rules and provide instructions to students based on their needs. It has the ability to be adaptable according to the needs of students with various personality types like their cognitive capabilities, emotional and motivational states, learning style, appraisal, and coping way with incoming events.

1. Introduction:

Based on its knowledge of the topic and experience gained during student interactions, the teaching system needs to suggest more relevant inputs to a student. Intelligent tutoring systems(ITS) have users who have different knowledge, learning styles, interests, background and preferences. To do this, an ITS must have a representation and understanding of the (i) topic or subject being taught (Knowledge/Data module), (ii) student being taught (Student Model) and (iii) methods of instruction to present the inputs to a student in an optimal way (Pedagogic module)

1.1 Literature Survey:

A comprehensive literature review from various national and international journals, official standard books and internet was performed before proceeding with the design of the project, in order to get an idea about the appropriate methodology to be adopted for this project

The 1950s saw the first ITS in the form of Computer Aided Instruction (CAI) systems with simple 'linear programs'. These systems were quite effective in helping students. In these systems the selected material is arranged and presented in a series of 'frames'to take the student step by step toward the desired behavior.

CAI systems have been improved as Intelligent Computer Aided Instruction systems(ICAI). These systems have the ability to control the material shown to the student.

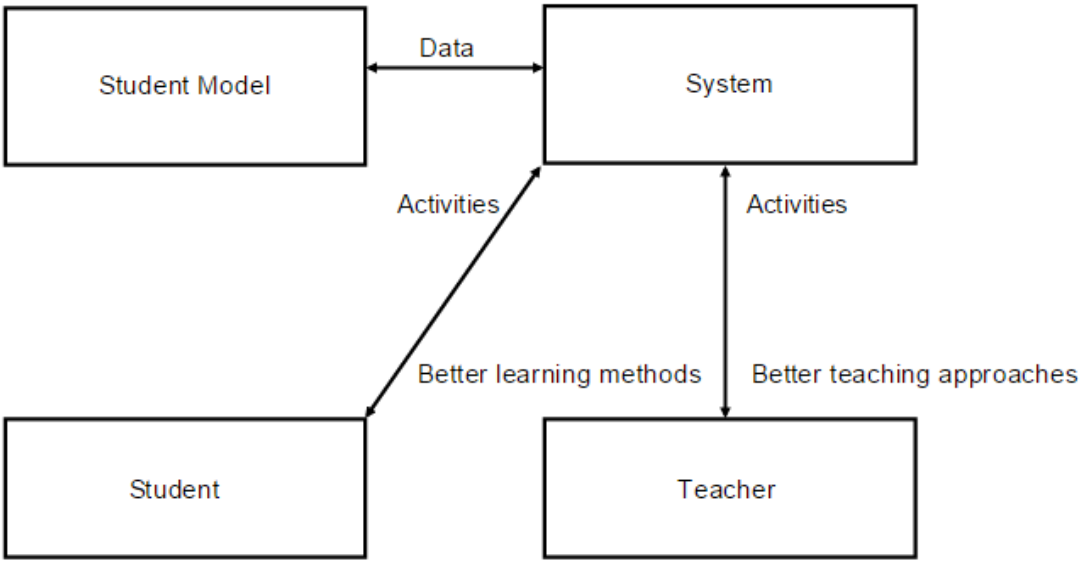
Generally, the central problem with early systems was that they were unable to provide individualization or rich feedback, because they were not designed to consider and understand the teaching course, the student states, or the teaching strategies

1.2 Proposed Work:

It is a web based system which facilitates the student in improving his/her performance by analyzing method(s) of study (VARK : Visual, Aural, Read/Write, Kinesthetic), time spent on each activity and other parameters.

Once a fair amount of data is gathered by the system based on the activity of each student, it applies machine learning techniques (algorithms) to analyze the data and suggests way to improve the performance.
The system tracks student's work, tailoring feedback and hints along the way. by collecting info on a particular student's performance, the system can make strengths and weaknesses and can suggest additional work

2. Methodology:



Student interacts with system and system captures information about the students' activities. System also collects data from teachers. Based on data gathered, SPAS updates student model. SPAS uses machine learning techniques(algorithms) to suggest better learning methods to improve academic performance of students. It also suggests better teaching approaches to teachers.

3. Outcomes:

3.1 Student Specific Outcomes:

- Skills and knowledge gained in previous semesters will be integrated to produce useful service which leads to expertise in the field.
- Project demonstrates skills and abilities to solve the real time problems.
- Project enhances communication, collaboration in team, increased creative and flexible thinking.
- Exposure to trending field of machine learning

3.2 Project Specific Outcomes:

- Design and implementation of SPAS
- Innovation in quality education
- Performance enhancement of students and faculty in the field of academics

4. References:

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