

Abstract

Essam Kosba

Applying Multiple Student Modeling Techniques in Intelligent Tutoring Systems

An important aspect of Intelligent Tutoring Systems (ITSs) is their ability to provide individualized instruction in a manner similar to what offered by a personal human instructor. A student model is described as the information that ITS keeps about an individual student. ITSs should actively support the student's learning process through tailoring the teaching process carried out to each individual student. The main purpose of a student model is to provide the planning component of an ITS with the information it needs to a suitable instructional action. Probability Theory Intelligent Tutoring System (PTITS) is an intelligent system for teaching the fundamentals of the probability theory. The PTITS' approach to building the student model relies on gathering a great deal of information about the student through employment of both overlay and buggy models. An approach to inexact modeling of student ability based on certainty theory and fuzzy sets theory was adopted as a way to formulate the knowledge required in these models. More adaptability to the student status and more flexibility to diagnose student misconceptions are the main goals behind the conjunction of both models in PTITS. The developed architecture opens the door for more participation from teachers and instructors in developing their own courses using ITSs and hence for more conviction with ITSs' role in education.