SIENA: A SUPPORT FOR AUTONOMOUS LEARNING FOR FUTURE CLASSROOM

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Abstract

SIENA (http://siena.ull.es/) is a web application that was designed to detect a student's existing knowledge and to aid in self-evaluation and self-learning, providing for student-oriented learning. The tool was conceived to work with a subset of conceptual maps, created by the professor, whose nodes are situated in the map in the order that the students requires for its comprehension progressing from objective concepts to existing knowledge. These nodes contain a set of questions for an adaptive test and several materials for self-learning such as web pages, tutorials, applets, etc. The SIENA computer tool starts to evaluate from the previous concepts until the target concepts defined on the map along in the map as long as the student achieves a satisfactory grade on the nodes. When a concept is failed, the system stops progressing along that branch of the map, since it is assumed that if that concept has not been assimilated, then neither will those that follow and for which a knowledge of the former is a prerequisite. The tool has been successfully used in courses relating Computer Architecture (Higher Education), using simulators, among others, such as MNEME and SIMDE (simulators developed by the authors for memory hierarchy and superscalar/VLIW architectures respectively) and elementary Mathematics (primary education), showing that it is applicable regardless of the field of knowledge involved.

Keywords: Educational resources, Educational practices.

Presenting Author's biography

Lorenzo Moreno received his Ms and PhD degrees from the Universidad Complutense de Madrid, Spain, in 1973 and 1977 respectively. From 1989 he is Full Professor in the University of La Laguna, Spain. His research include computer architecture and computer education.