SAAW: Adaptive Learning System on the Web

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1. The SAAW

The expansion of the World Wide Web and the use of computers in education have increased the demand for Web courses and, consequently, the need for systems that simplify their production and reuse. Such systems must provide means to show the contents in an individualized and dynamic way, which requires they present flexibility and interactivity as main characteristics. Nowadays, Adaptive Hypermedia Systems (AHS) have been released to support these characteristics.

The SAAW is an AHS whose architecture is component-based and it is divided in two main sections: the web manager system and the learning envirommment (i.e., plug-in). Thus, plug-ins can be added or removed depending on the target subject. Other AHS have a component-based architecture, for example [1, 2], but ours emphasizes the learning envirommment. The plug-in is related with the subject domain and must increase the interactivity with the user. The plug-ins reside in the client and they can be used in automatic student evaluation. This results in a reduction of the work load into the server.

The plug-in is an important part of the SAAW architecture, because they are directly related to the application domain. In addition, they are responsible for the evaluation of the user's interactions and for the largest interactivity with the system.

The SAAW prototype use the language PHP, the database manager MySQL and the first plug-in used is the iGeom [3], a dynamic geometry software, used to draw any euclidean constructions that are traditionally made with ruler and compass where the student gets a more precise drawing and can freely move points over the screen. The use of iGeom in SAAW allows: the creation/edition of exercises; automatic evaluation; the adaptation of resources, taking into account the exercises evaluation; to communicate to the server results of interactions with the user.

This prototype dynamically generates HTML pages adapted for each course and user, considering the system preferences and the student's model. Since 2004, this prototype (figure 1) is being used by students and teachers in a compulsory discipline offered for an undergraduate course in mathematics in the University of São Paulo (http://www.ime.usp.br/ leo/mac118/04).

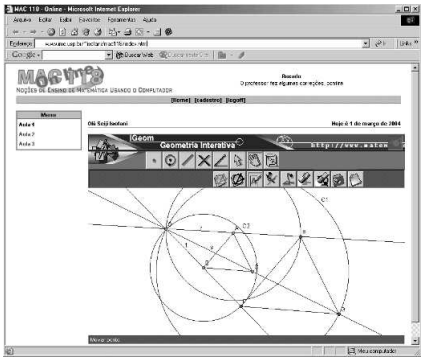

Figure 1: The SAAW using the plug-in *iGeom*.

References

[1] P. Brusilovsky and H. Nijhawan, "A framework for adaptive e-learning based on distributed re-usable learning activities," in *Proceedings of World Conference on E-Learning*, 2002, pp. 154–161.

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[3] L. O. Brandao and S. Isotani, "Uma ferramenta para ensino de geometria dinmica na internet: igeom," in *Anais do Workshop sobre Informática na Escola*. XXIII Congresso da Sociedade Brasileira de Computação, 2003, pp. 1476–1487.