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Preface

The Applying Data Mining in e-Learning Workshop (ADML'07) will be held in conjunction with the Second European Conference on Technology Enhanced Learning (EC-TEL07) in Crete, Greece on September 17-20, 2007. ADML is related to the series of Educational Data Mining (EDM) workshops organized in conjunction with the AAAI'05, AIED'05, ITS'06, AAAI'06, AIED'07, UM'07, and ICALT'07 conferences (please see www.educationaldatamining.org for the further information).

Recently, the increase in dissemination of interactive learning environments has allowed the collection of huge amounts of data. A popular and effective way of discovering new knowledge from large and complex data sets is data mining. As such, the ADML workshop aimed for papers that study how to apply data mining to analyze data generated by learning systems or experiments, as well as how discovered information can be used to improve adaptation and personalization. Interesting problems data mining can help to solve are: what are common types of learning behavior (e.g. in online systems), predict the knowledge and interests of a user based on past behavior, partition a heterogeneous group of users into homogeneous clusters, etc.

The goal of this workshop is to bring together researchers in Data Mining, e-Learning, Intelligent Tutoring Systems and Adaptive Educational Hypermedia to discuss the opportunities of applying data mining to e-learning systems. This mix of data mining, e-learning, tutoring system and adaptive hypermedia researchers is also reflected in the program committee. The workshop aims at providing a focused international forum for researchers to present, discuss and explore the state of the art of applying data mining in e-Learning and of evaluating the usefulness of discovered patterns for adaptation and personalization. It will also outline promising future research directions.

In response to the call for papers, a total of 8 submissions was received. Each submitted paper was peer-reviewed by at least two referees. As a result of the reviewing process, 7 papers were accepted for oral presentation at the workshop and for the publication in the proceedings as full papers. The selected papers focus on the following topics, constituting the basis for the discussions of the workshop sessions.

"Revisiting interestingness of strong symmetric association rules in educational data" by Merceron and Yacef presents the results of applying association rules to the data obtained from Logic-ITA, an intelligent tutoring system in formal proofs for propositional logic. They use this data mining technique to look for mistakes often made together while solving an exercise.

"*Drawbacks and solutions of applying association rule mining in learning management systems*" by García *et al.* surveys the application of association rule mining in e-learning systems, and especially, learning management systems. They describe the specific knowledge discovery process, its main drawbacks and some possible solutions to resolve them.

"Towards educational data mining: Using data mining methods for automated chat analysis to understand and support inquiry learning processes" by Anjewierden *et al.* investigates the application of data mining methods to provide learners with a real-time adaptive feedback on the nature and patterns of their on-line communication while learning collaboratively. They classify chat messages to understand and support inquiry learning processes.

"Discovering Student Preferences in E-Learning" by Carmona *et al.* proposes to use adaptive machine learning algorithms to learn about a student's preferences over time. The information about learning styles is employed with a Dynamic Bayesian Network to discover the user's preferences.

"Using Web Mining for Understanding the Behavior of the Online Learner" by Nachimas *et al.* describes a case study of the behaviour of an online learner by applying web mining techniques. They developed a visualization tool allowing a graphical examination of data hidden in the log files.

"A Problem-Oriented Method for Supporting AEH Authors through Data Mining" by Bravo *et al.* proposes the use of web mining techniques for detecting potential problems of adaptation in AEH systems, in particular searching for symptoms of these problems (called anomalies) through log analysis and trying to interpret the findings.

"E-Learning Process Characterization using data driven approaches" by Viola shows that data driven approaches can be considered effective for advancing an e-learning environment. The paper is based on the summarization of a case study with data coming from a European E-Learning Project.

All these papers will be made available online at CEUR (CEUR-WS.org) and at the workshop's website (http://www.win.tue.nl/~mpechen/conf/adml07/).

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