A new approach for evaluating the virtual education of students using association rule-mining in cloud computing environments

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Abstract

Nowadays, most universities and organizations use various computer systems, operating systems, mobile devices and databases with different infrastructure, hardware and software architectures. Many internet-based systems and advanced distributed environments have currently been developed in adapting to heterogenous systems. Cloud and grid computing are the new developed environments that present required services of users. In virtual education system, learners use different systems and facilities in various geographical locations. Therefore, evaluating the quality of education of learners is sophisticated. To this issue, we have developed a new approach for analyzing and extracting useful rules based on distributed heterogenous environments. For this research, we have implemented our proposed approach based on simulated grid computing environment. The obtained results confirm that the extracted rules based on distributed information can be useful to personalize education system for learners based on their characteristics and locations. This new architecture is powerful and rapid in comparison with centralized architectures.

Keywords: cloud computing, association rule mining, virtual education;

Selection and peer review under responsibility of Prof. Dr. Doğan Ibrahim.

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1. Introduction

Virtual education (VE) is a new experience in the world of online learning. Online education is a multi-billion dollar global industry that has experienced a dramatic increase in the rate of adoption by educational institutions, the military and private organizations (White, 2009). Currently, many e-learning systems are used in education as a way to expand traditional education or replace it. VE goes beyond asynchronous online learning modes in that it offers a three-dimensional (3D) virtual reality environment along with a real-time chat feature. In virtual education students or learners are engaged in e-learning system, possibly in different levels and to have experiences that would otherwise be impossible to offer in a classroom environment (Ciaramitaro, 2011). The virtual education system has many advantages for students such as thinking differently, learning is more inquiry-based, interact with other students from around the world remotely and without restrictions, identical facilities for all

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