COURSE SELECTION RECOMMENDATION SYSTEM FOR HIGHER EDUCATION

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The decision that students have to make on which master’s courses to enroll is way more difficult than it looks: this choice can have a direct effect on their academic and personal goals and may define their future professional area. Some interesting approaches have already been proposed: AACORN [1] is a system that aims to recommend courses by retrieving the similar students histories to the target student, and identifying the courses that appear often in those histories so as to produce recommendations. On other hand, RARE [2] tried to recommend courses to students using association rule mining on historical enrollment data. The system also let students to rate recommendations in order to create new rules and suppress bad ones. However, these approaches are mainly focused on how each course will meet students’ interests. In order to overcome this limitation, Vialardi et al. [3], modeled students potential with the average of their grades, so as to predict if a student would pass a certain course. The students would then ask the system if a set of courses were good to them, and based on the prediction if the student would pass these courses the system would recommend them. Though looking into students’ capabilities, this approach doesn’t recommend the courses that are more suited to each student’s capabilities, since it only recommends courses based on the prediction if a student will pass the course or not. Therefore, understanding students’ particularities is needed so as to recommend courses that are not only interesting to them, but also adequate to their capabilities.

In this paper, we address the problem of recommending capability-suited courses, and propose a recommender system that suggests master’s courses to students. Any student may use the system, either looking for the best set of master’s courses or to see if a certain set of courses is suitable to him. Our system is based on the following idea: if two students had similar performance in bachelor, then they are likely to have the same performance in the same set of master’s courses. Therefore, when a student is looking for courses to enroll, the system builds his profile, which contains information on the grade and number of enrollments on the courses the student took. This profile representation aims to capture the student’s capabilities. The target student profile is then used to retrieve the most similar students – according bachelor path – from an historical database. Each of these students master’s path is classified according their quality and the courses of the student with the best master’s path are recommended.

Experimental results over real data, from a bachelor and a masters program, present a tendency for the worst students coming from bachelor obtaining better grades with our recommendations, while the best students have a greater tendency to maintain and not decrease their grades during masters. Our results also show that the more courses from our recommendation are followed, the higher is the final master’s grades average. However, there are still some issues to solve: more accurate methods to retrieve the most similar students (even when missing information exists regarding their profiles) must be used, and a more intelligent way to produce recommendations, taking into account both student interests and desired knowledge may improve results.

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References