Increasing the Profitability of Students in MOOCs using Recommendation Systems

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ABSTRACT

Massive open online courses (MOOCs) have earned much attention since the beginning in 2011 and students who signed up for at least one course has crossed 35 million in 2015. Yet, there has been a lack of research conducted to study the design of learning materials and tasks of MOOCs. Moreover, there are limited researches that focus on implementing recommendation systems in MOOCs to predict what students want more aiming to increase their profitability. In this paper, the authors present the algorithm they are creating. The main purpose of this algorithm is to create automatic mechanisms as the recommendation system to give such assistance and personalized guidance to students.

KEYWORDS
Algorithm, MOOCs, Open Education, Profitability, Recommendation Systems

1. INTRODUCTION

Massive Open Online Courses (MOOCs) represent a change in educational paradigm and perhaps point towards the future of course deliverance, (MOOCs) are Open Educational Resources (OER) which provide a strategic opportunity to improve the quality and outreach of education. The success of a MOOC is then related to the satisfaction of participants who find interest in its content and commits to follow it as long as it corresponds to their expectations.

A growing number of institutions have been involved in engaging and experimenting with MOOCs for the purpose of expanding access, marketing and branding, as well as the potential of developing new revenue streams. Motivations for learners to participate in MOOCs are varied, and many struggle to engage with courses and keep motivated in the context of an online learning environment (Yuan & Powell, 2013).

Some important platforms of current MOOCs already include recommendation systems, for example Coursera, however, we cannot know its operation because it is not an open source platform. The recommendation systems are increasingly present in our day-to-day virtual life, and in particular the recommendation systems applied to education are the subject of numerous studies (Manouselis, Drachsler, Vuorikari, Hummel, & Koper, 2011), trying that its inclusion can improve learning.

2. GROWTH OF MOOCS

More people signed up for MOOCs in 2015 than they did in the first three years. For example, Coursera the largest online course provider in the world, added 7 million new students to its user base which comprised 17 million students in total.

Around 1,800 new courses were announced in 2015, taking the total number of courses announced since the inception of MOOCs to 4,200. Explosive growth like this means the number of courses...
is still rising. And it’s doing so daily. The number of MOOCs listed on Class Central grew at a rate of greater than 15 courses per day (see Figure 1). But this kind of growth, like that associated with Coursera, is “faster than Facebook,” specifically in terms of having a user growth rate greater than 2,000%. That’s growth from roughly 160,000 learners at one university in 2011 to 35,000,000 learners at 570 universities and twelve providers in 2015 according to ONLINE COURSE REPORT.

Business & Management, Science, Social Sciences, Computer Science, Humanities, Education & Teaching, Health & Medicine, Programming, Art & Design, Engineering and Mathematics, all of these subjects have seen substantial growth in the number of courses offered in their disciplines over the past three years. Meanwhile, subjects with lower earning potential that do not teach technical skills have sustained decay over the past three years, with Humanities courses declining rapidly from 20 percent of overall subject distribution in 2013 to less than 10 percent in 2015. This shifting distribution shows a pattern of prioritizing career outcomes for learners who are either on the job market or already in the workforce, specifically, that of technology (see Figure 2).

This is the most comprehensive list of MOOC courses providers (see Figure 3):

- **Coursera**: The most popular provider of massive open online courses globally, Coursera has more than 17 million users in more than 1000 courses from 117 institutions;
- **edX**: Owned by MIT & Harvard University. It’s one of the largest providers of MOOC education internationally. Topics include biology, business, chemistry, computer science, economics, finance, electronics, engineering, food and nutrition, history, humanities, law, literature, mathematics, medicine, music, philosophy, physics, science, statistics and more;
- **Canvas Network**: It offers open, online courses taught by educators anywhere in the world. It collaborates with educators, institutions and technologists to cut educational barriers;
- **FutureLearn**: Owned by The Open University, England which provides step-by-step free online courses from topics such as science, technology, art, humanity, spiritual science and business.

English is the most common language in MOOCs platforms by 80% in 2014 and by 75% in 2015. After English, Spanish and French are the biggest languages in which courses are offered. Courses are currently being offered in 16 different languages, including Arabic in Jordan and Morocco.
An Extensible Framework to Sort out Nodes in Graph-Based Structures Powered by the Spreading Activation Technique: The ONTOSPREAD Approach
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