**SYNOPSIS**

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Title of the Topic: Learning Analytics Tool for Predictive Modeling on MOOCs for professional Learning

Area Of topic: Predictive Learning Analytics

**ABSTRACT**

Educational technology has obtained great importance over the last fifteen years. Learning analytics and Massive Open Online Courses (MOOCs) are two of the most relevant emerging topics in this domain. Since they are open to everyone at no cost, MOOCs excel in attracting numerous participants that can reach hundreds and hundreds of thousands. Massive Open Online Courses (MOOCs) appeared as a proper way to provide lifelong learning for potential learners of both professional and academic settings. Even Industry leaders can benefit from these courses because they foster the professional development of their employees in their industry.

Despite these benefits, these online courses continue to register a high dropout rate and a vast number of their learners do not acquire the certificate provided at the completion of the course. This article proposes a predictive modeling tool with several Machine Learning algorithms (for generating Predictive Models) and feature engineering in MOOCs data integrated to contribute research to this specific issue. The proposed tool predicts two situations: which learners are likely to leave the course (dropout) and which learners are expected to pass the course (certificate acquisition). The tool was tested in fifteen deliveries of seven MOOCs. Initial results provide interesting information, for instance, that the accuracy of predicting certificate acquisition is higher than the precision of predicting dropout for all algorithms.



**BRIEFS ABOUT CONTENTS:**

1. **THE PROPOSED APPROACH: edX-MAS+ TOOL**

In this a modular tools is proposed for supporting the generation of predictive models for edX MOOCs. edX-MAS+ calculates several input variables, which are indicators that measure the interaction and time invested with the platforms, activity, consistency, and effectiveness of learners throughout their learning; all of them obtained from the processing of navigation and video events, forum messages, among others.

1. **edX-MAS+ MODULES**

This model consist of various sub modules

* Import Model Module:

This module allows extracting, cleaning, selecting and preprocessing course data for dropout detection and for selecting the relevant activity from the data collection.

* Model Generation Module :

This module supports the generation of Predictive Models of the selected course per day or per week (two possible frequencies).

* Visualize and Export Module :

This module provides a visualization of the model metrics as graphics varying with the parameters selected in the Stats Predictive Modelsmenu.

**APPLICATIONS**

1. An Integrated Framework with Feature Selection for Dropout Prediction in Massive Open Online Courses.
2. Dropout prediction for MOOCs using course progress normalization and subset selection.
3. A Blended Deep Learning Approach for Predicting User Intended Actions.
4. Analysing the predictive power for anticipating assignment grades in a massive open online course.

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