Temporal Modeling and Ensemble Approach

We focused on a course named Project Management launched in August 2014 hosted by Canvas. This was an eight-week course with 11 modules and 3,617 students for this course. I propose a temporal prediction model using ensemble machine learning methods that aims to identify the struggling students accurately and reliably in MOOCs in advance so that teachers can provide timely and quality pedagogical support to harvest these low hanging fruit of MOOC participants. Specifically, we design a temporal modeling approach, which prioritizes the at-risk students in a chronical order so that instructors can deal with the subset of at-risk students instead of all of them. This may improve the quality of intervention or support instructors offer. Moreover, we proffer appending historical features into the current week of features for model building and introduce principle component analysis to identify the breakpoint for turning off the features of previous weeks. This modeling method outperforms the approach model by summed features. To deal with the data variability, this study presents an ensemble stacking generalization approach to build more robust and accurate prediction models than the directly application of base learners.

Diagram

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