

MOOC Effort Dashboard: An Interactive Web Dashboard Built in R

Jason Baik

Carnegie Mellon University
joonwoob@andrew.cmu.edu

John Stamper

Carnegie Mellon University
jstamper@cs.cmu.edu

Huzefa Rangwala

George Mason University
rangwala@cs.gmu.edu

Massive Open Online Courses (MOOCs) offer accessible education to students around the world. However, a major issue is the extremely high dropout rate. MOOC literature reveals that it ranges from 90% to 92%. Our research seeks to identify factors of dropouts. We developed a visual dashboard that targets educators and course administrators to understand student course behaviors and identify students at risk of dropping out.

We used R packages for data visualization and integrated these in an interactive web service with shinydashboard (Winston Chang and Barbara Borges Ribeiro, 2018) and shiny (Winston Chang, Joe Cheng, JJ Allaire, Yihui Xie and Jonathan McPherson, 2018). Shiny provides interactive features in R and shinydashboard is a template for building dashboards in R.

The Stanford Lagunita Online course, Statistics in Medicine, enrolled approximately 9000 students, 7659 of whom were examined. We estimate that around 5000 students dropped out, which is a dropout rate of 65.3%. The landing page introduces the developer of the MOOC Effort dashboard, its target audience, a brief explanation of the other pages and short motivation for using our product. Next, the Overview of Class tab provides a bird's-eye view of the class with the number of students, dropout rate, distributions of module usage and final grade. The Final Grades Table livestreams data from a csv file by automatically updating changes every second. The third tab is the Student Selector, a customizable search query. When the user selects a table, corresponding filters appear. Then, the user chooses desired columns in the data and the output is a personalized view of the raw data. The Effort Level tab shows visualizations of students' effort by completion of course and effort level (high, medium, low). For interactive purposes, we added graphs of each student's effort with the plotly package (Carson Sievert, 2018). These graphs enable the user to pick students. Then, they illustrate each student's effort level over the course period by highlighting. The last tab lays out results of our K-Means Clustering analysis. We present our analysis with plotly graphs for user interaction.

The MOOC Effort Dashboard is certainly unique in the learning analytics world. It is coded in R, an open source programming language. In the near future, we will host the MOOC Effort Dashboard on our servers so that other researchers have access. Furthermore, we have made our application reproducible for other researchers by hosting the source code on GitHub: https://github.com/jasonbaik94/mooc_project_lak19. To view the demo video, please visit: <https://www.youtube.com/watch?v=9YZMc9x164o&feature=youtu.be>

References

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