

Bookxor – iCampus Prize Submission Document

Project Name: Bookxor

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Need

Every day at MIT, students and faculty alike use thousands of documents. Professors share course notes with students, students turn in assignments to professors for feedback, and both prepare articles and papers for publication. However, without collaboration between readers and authors, the documents are not improved, despite their heavy use. Additionally, students under-utilize other campus resources available to them, such as those available through the MIT Library system.

On the class level, many professors currently have high-quality notes, however they are disconnected from the classroom in that students' course note-reading experience does not directly impact what is discussed in lecture. A professor rarely knows if his students have read the notes or with which sections they may have struggled. Similarly, the professor does not necessarily know which parts of the lecture were confusing. We set out to better connect this system by providing professors with analytic and feedback tools to better understand how students learn outside of the classroom, while also providing students with tools for collaboration with each other, and further instructor interaction.

Description

Bookxor closes the feedback loop between students and professors when it comes to documents. While students read course notes, data on time spent on each page is recorded, and students can rate each paragraph and figure as insightful or confusing. They can also leave deeper feedback in comments to push the author for clarification, or offer their own alternate explanation. In turn, professors can view analytic heat maps showing where in the notes (to sub-page granularity) students spend the most time. This is even associated with different activities (lecture preparation, problem set, lab, or exam review). Paired with ratings and comments, professors and T.A.s gain a deep understanding of their students' study patterns and material they find difficult, and can use this valuable teaching feedback to optimize lectures and other face-to-face time. They can also use the feedback to guide course note revision to address students' sticky points, make the notes stronger for future classes, and prepare them to publish via personal web site, OCW, or traditional clearing house.

Students also benefit from the collaborative environment. They can see where other students are reading, quickly helping them find relevant material. On each document, links will be automatically provided to related resources within this project or the MIT Libraries' extended system, so they are exposed to additional material, and can easily look further into topics of interest. A chat interface is offered for every class so that students working on the same material simultaneously can ask each other for help in real-time.

Impact

We foresee Bookxor becoming a powerful tool for both professors and students. Professors will benefit from detailed information regarding how students use course materials, which will translate to improvements in written materials, and topics addressed in lecture. The “ARC (Analytics-Ratings-Comments) Feedback Funnel” starts with massive amounts of purely quantitative data: detailed analytic heat maps on where students are spending their time on documents direct professors to areas of particular interest or confusion. Student ratings of paragraphs, graphs, etc. start to fill in the details of why students are spending extra time on certain pages, and student comments provide deep feedback on what needs to be improved, with possible suggestions on how to do so.

Our vision is that this system becomes an institute-wide tool. We foresee the system used in many courses throughout MIT, with a comprehensive database of high-quality, authoritative course notes made available to all students. As courses with similar or overlapping content use the website to share documents, a collection of alternate explanations for each topic is automatically compiled, with the most highly-rated alternates suggested to students in addition to their course’s own notes. Documents from prerequisite classes could be suggested for review, or from more advanced courses to show students where they are going. MIT education could be revolutionized from a conglomeration of independent courses to an individualized, guided journey through an entire, comprehensive, open body of knowledge.

This system can also be used for document review and draft revision. Comments on documents – a student’s lab report or a professor’s journal article draft – are currently either gathered in handwritten form on multiple printed drafts or through a series of emails. In any case, comments are distributed, forcing the author to spend time juggling different mediums, and often referring to many copies of the document to find comments on the same figure or paragraph. Similarly, there is no automatic way for them to synthesize the feedback to discover which areas need the most work in the net opinion of their reviewers. By offering this centralized information and additional feedback mechanisms, students and faculty can receive more valuable responses, and then save time in the revision and correction process. In the case of student lab reports, the lab instructor, writing instructor and a peer reviewer can all comment on a single draft of the report for the student author to then review and correct. Hopefully this tool will be adopted and appreciated particularly by writing and communication intensive classes.

Scale Up

There are a couple features which are not up today, but will be in the very near future. These include the ability to join an existing class, analytics-based action items for professors, and related document search.

Once these final central features are added, we will deploy and pilot in several classes for the remaining portion of the spring semester, and collect data and feedback from both professors

and students in order to improve the interface, and analytics provided.

Team

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UI / Front-end / Organization

Erika Bildsten. MIT Class of 2012, Mechanical Engineering, Electrical Engineering and Computer Science.

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Back-end computer engineering

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Back-end computer engineering

License

GPL

Working Prototype/Functional Implementation

<http://bookxor-dev.xvm.mit.edu/>

You can log-in with bildsten@mit.edu, password: fish, or create your own new account.

Video

<http://web.mit.edu/~bildsten/Public/bookxordemo.mov>