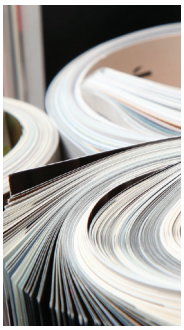

Collective Class Wisdom: Collaborative Lecture Annotation

Peter Brusilovsky, *University of Pittsburgh*

This installment of *Computer*'s series highlighting the work published in IEEE Computer Society journals comes from *IEEE Transactions on Learning Technologies*.

From a curiosity offered by a handful of pioneer instructors and institutions, the video lecture has evolved into a mainstream learning technology. Today, many universities routinely record lectures, making them immediately available online for their own students and broader audiences. Most recently, MOOCs (massive open online courses) have started to offer video lectures as their primary form of content delivery, reaching millions of learners worldwide.

Innovative features such as slide and video separation, slide-level navigation, note taking, and advanced search have gradually become standard components for any state-of-the-art system. Yet, working with video lectures is still harder than with more traditional textbook-style content. By its nature, video is a continuous medium that's easy to watch at a normal pace but hard to skim, review, or access at random. A textbook's format supports both presenters and learners by emphasizing key points (font and typography for presenters, highlights and notes for learners); in contrast, relevant fragments in video lectures are hard to distinguish from irrelevant ones, unless you're watching the lecture sequentially in real time.

This is exactly the problem that motivated the work of Evan Risko and his colleagues at the University of British Columbia ("The Collaborative Lecture Annotation System (CLAS): A New Tool for Distributed Learning," *IEEE Trans. Learning Technologies*, vol. 6, no. 1, 2013, pp. 4–13).

The authors start with an analysis of previous research, acknowledging two important trends: *video annotation* and *social navigation*. Video annotation allows viewers to comment on (and even discuss) specific points of the lecture, whereas social navigation engages the "wisdom of the crowd," collating the whole-class watching behavior and showing which fragments were watched most frequently.

The authors then suggest an interesting innovation that they call *collaborative lecture annotation*. The idea is really simple: students mark important parts of the lecture while watching it simply by pressing the spacebar. All watched lectures retain this visually annotated timeline, showing important spots and allowing students to review them quickly while studying for a test. This approach then harnesses the collective wisdom of the class by accumulating the important spots in the lecture as signaled by the entire class: the "group timeline" displays what the class as a whole marked as important, emphasizing the spots noticed by the most watchers.

To evaluate their approach, the authors performed a user study that found that the group timeline was more popular than an individual one. While the study also revealed some issues (the marks slightly lagged the actual spots), it confirms the approach's overall promise and indicates directions for further work. In the broader context of modern learning technology research, this work indicates yet another area where harnessing the collective wisdom of multiple learners can improve educational processes for all. As the number of students studying the same topic grows and our ability to capture their interactions with learning systems increases, we should expect even more exciting socially driven technologies to be explored and brought into our everyday life. C

***Peter Brusilovsky** is a professor of Information Science and Intelligent Systems at the University of Pittsburg, Contact him at peterb@pitt.edu.*

Published by the IEEE Computer Society