Learnersourcing: Improving Video Learning with Collective Learner Activity

WorkLearn 2014 Application
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Millions of learners today use educational videos to master skills and take classes from online platforms such as YouTube, Coursera, or edX. However, when watching a video, learners face difficulty in accessing parts they want, understanding the overall structure, and seeing how other students learn. To address these issues, my research investigates data-driven video learning interfaces: interfaces that embed collective learner activity to improve video learning.

We introduce **learnersourcing**, a general framework for motivating video learning activity and feeding the collected data back into the video interface. We present two learnersourcing methods. In **passive learnersourcing**, learners' natural interactions with learning material are automatically captured and analyzed to identify interaction patterns. In **active learnersourcing**, learners are prompted to provide input that is both pedagogically meaningful to learners and useful to the system. We are building prototype video learning systems to explore the design space of learnersourcing applications. For example, learners' second-by-second video interaction data from lecture videos improve video navigation, paid crowd workers extract step-by-step structure from how-to videos, and learners summarize individual steps from how-to videos into higher-level goals. With this conceptual framework for incorporating collective learning data into the learning experience, we are addressing technical and motivational challenges in building large-scale, video-based online education platforms.

Bio:
Juho Kim is a Ph.D. candidate in the User Interface Design Group at MIT CSAIL (Computer Science and Artificial Intelligence Laboratory). He designs interactive technologies for online education, with a focus on leveraging collective learner activities to enhance the video learning experience. His research introduces *learnersourcing*, a set of methods and tools that collect, process, and visualize large-scale learner activities. He is interested in applying established learning theories beyond small, in-person classrooms. He earned his M.S. in Computer Science from Stanford University in 2010, with a specialization in Human-Computer Interaction, and B.S. in Computer Science and Engineering from Seoul National University, South Korea, in 2008. He also interned at prestigious research labs during his Ph.D., including Microsoft Research, edX, Adobe's Creative Technologies Lab, and IBM Almaden Research Center. The Samsung Fellowship has supported his graduate studies for seven years.