CoTrack2: A Tool to Track Collaboration Across Physical and Digital Spaces with Real Time Activity Visualization

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ABSTRACT: Multimodal learning analytics (MMLA) offers a holistic view on collaboration by going beyond traditional log data collection and taking into account data from the physical space. It holds the potential to support teachers and students during collaborative learning. In this direction, we present a web-based MMLA prototype: CoTrack2. This prototype is the updated version of CoTrack [1] and it also supports online collaboration activity and real time activity monitoring. Teachers can create collaborative learning sessions with the help of its web interface. Students can join these sessions and use Etherpad (a collaborative text editor). It allows students to construct a joint document as the output of their collaborative activity while speaking to each other through an audio/video channel. The tool tracks each of the students' activities (i.e. logs) in Etherpad. The tool also records audio-video data from collaboration sessions. This data can be later utilized for annotation purposes or a detailed understanding of collaboration behavior. CoTrack2 uses a Javascript library[1] to synchronize the clocks between clients and servers. CoTrack2 also provides a dashboard for teachers. This dashboard is updated for every 5 seconds time window. This dashboard has two levels of visualization- group and individual. The dashboard visualizes total activity in the Etherpad and students 'who-is-talking-after-whom' network. CoTrack2 uses voice activity detection to get students' speaking time and speaking sequence. This sequence is then utilized to generate the network. The dashboard also presents collaborative writing information at the individual level (e.g., number of characters added or deleted). The dashboard also provides a view of students' written text with time navigation to inspect the evolution and contributions to the joint document.

Demonstration Movie: https://youtu.be/IOH4S2doZTA

Keywords: Collocated collaboration, Multimodal Learning Analytics, Computer-Supported Collaborative Learning

References

1. Chejara, P., Prieto, L. P., Rodríguez-Triana, M., Ruiz-Calleja, A., & Shankar, S. K. (2020). Cotrack: A tool for tracking collaboration across physical and digital spaces in collocated blended settings. In *Companion Proceedings of the 10th International Conference on Learning Analytics & Knowledge*.

[1] https://github.com/NodeGuy/server-date