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Bertrand Schneider Wins Best Paper Award at LAK13 Conference

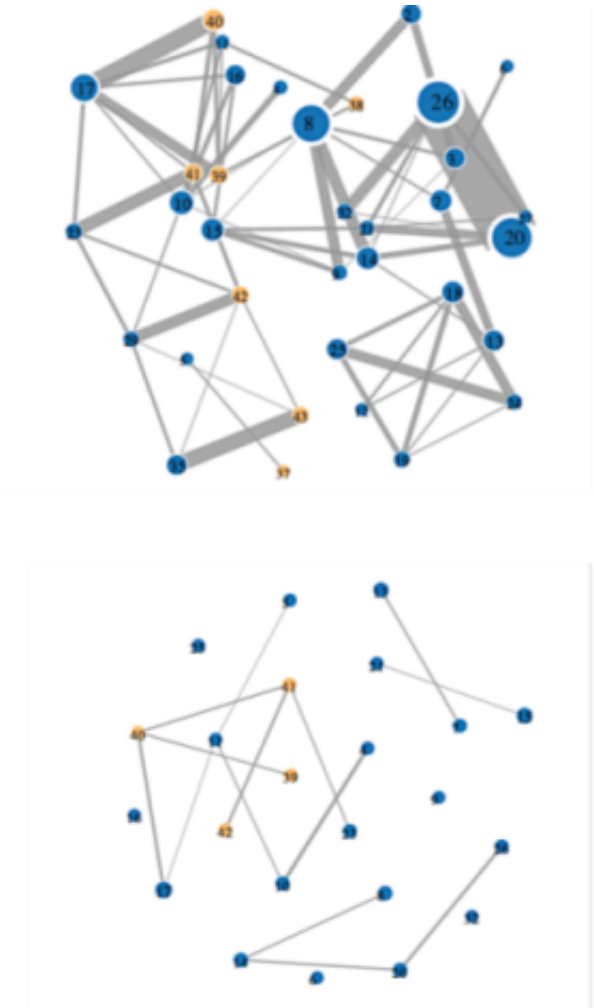

Figure 1: Networks built with eye-tracking data. The top graph shows a group with a high quality of collaboration; the bottom graph shows a group a low quality of collaboration.

Making sense of collaborative eye-tracking data

To read Schneider's complete paper, click here.

Funded by a research grant from IRiSS, Schneider's paper won the Best Paper Award at the Learning and Analytics Knowledge conference in Belgium during April of 2013. Below is an overview of the award-winning paper.

Outcome: Studying human collaboration with multiple eye-tracking devices is challenging, because it generates vast amounts of data (millions of data points). We found that representing this information as networks allows us to extract meaningful indicators, which can be used to predict a group's quality of collaboration using machine learning algorithms.

Impact / benefit: Our approach provides a first step in measuring collaboration in a reliable way. Being able to quantify human interactions provides us with opportunities to teach collaborative skills more efficiently.

Explanation: Understanding the factors that influence and promote a good collaboration is challenging: each group dynamic is unique and complex. Our framework makes use of two eye-trackers running simultaneously and recording the gaze of two individuals while they are remotely collaborating on a task. To make sense of this giant dataset, we borrowed techniques from Social Network Analysis: we built networks where each node represents the amount of joint attention on an

area of the screen, and edges saccades between those regions. We found that those networks can not only predict the quality of collaboration of a group, but also make finer prediction concerning a group's interactions (e.g. to which extent does a group reach a consensus, equally divides the work or tries to sustain mutual understanding).

This work won the Best Paper Award at the LAK13 (Learning Analytics and Knowledge) conference held in Belgium in April 2013.

About Bertrand Schneider

Bertrand Schneider is currently completing a PhD in the Graduate School of Education (GSE) as well as a masters in the Computer Science department at Stanford University. His research interest focuses on collecting vast datasets in collaborative learning situations, and applying data mining techniques to extract relevant patterns about students' learning trajectories.