CALL FOR PARTICIPATION IN WORKSHOP: DUET 2013: Dual Eye Tracking in CSCL

Organizers

Patrick Jermann, Ecole Polytechnique Fédérale de Lausanne, Switzerland

Darren Gergle, Northwestern University, USA

Roman Bednarik, University of Eastern Finland, Finland

Pierre Dillenbourg, Ecole Polytechnique Fédérale de Lausanne, Switzerland

Patrick.Jermann@epfl.ch

WORKSHOP CONTENT

Dual Eye-Tracking (DUET) consists of synchronously recording the gaze of two participants who work together on a task. The technique has been applied in collaborative situations to study basic communicative processes (e.g. grounding, referencing) as well as more complex problem-solving in collaborative learning environments (e.g. program understanding, playing collaborative games). Eye-tracking methodology appears promising to study collaboration as well as to support it. Possible applications include gaze-awareness and deictic tools, automatic scene labeling based on co-reference, group decision support, facilitating multiparty distant communication, etc.

We welcome contributions to the DUET workshop that address the following challenges that stand ahead of applications of (dual) eye-tracking applications in CSCL. Because of the novelty of the dual approach, we also include the more general theme of eye-tracking in collaborative situations in the scope of the workshop.

Methodology

- <u>Temporal granularity**:** moving from fixations to joint action.</u> What can low-level gaze and fixations tell us about higher cognitive activities? How and to what level of time scale does gaze data need to be aggregated to reliably reflect collaborative learning outcome? What existing methods for behavioral modeling can be reused with gaze data?

- <u>Multi-modality**:** combining gaze with other behavioral signals.</u> How is gaze combined with other communication modalities (particularly speech) and can the multiplicity of modalities help possible to detect learning outcomes from gaze patterns?

- <u>Measuring alignment: defining convergence of attention.</u> The definition of a basic set of standard variables and normalization methods would facilitate the exchange and comparison of results among researchers in the field. It can also inform the eye-tracking analysis software industry about which indicators are useful when looking at collaborative data from CSCL environments.

- <u>Task specificity: generalizing results across settings.</u> What are relevant task typologies that can be used to organize and compare findings from eye-tracking studies? What can be learned from task independent features (e.g. fixation duration)?

- <u>Tracking techniques**.**</u> What impact does task specificity have on recording dual gaze (e.g. how to compute alignment in relaxed WYSIWIS situations)?

Empirical Studies, Tools and Applications

- <u>Referential communication**.**</u> More studies are needed to understand basic communication and coordination processes in tightly controlled experimental tasks, and especially about the interplay of speech and deictic gestures (e.g. pointing, selecting, or in mobile situations, moving about in the scene and postural orientation) which are important

for high learning outcomes.

- Complex tasks and settings**.** In naturalistic situations the challenge is to understand how gaze patterns relate to higher (in terms of time scale) cognitive and communicative processes. For example, is it possible to identify gaze characteristics that are specific to certain levels of reasoning (e.g. about concrete of abstract aspects of the task, about cognitive or metacognitive aspects), levels of expertise, roles in the interaction, or certain communicative actions (e.g. prompting, telling)?

- Gaze Awareness Tools**.** The system displays the gaze of one user to the other. Open questions concern the display modalities (on demand vs. automatic), the display format (real-time vs. summarized), the way users handle errors and imprecision and how awareness tools are complemented by explicit deictic references.

- Interaction Modeling Frameworks. The system uses collaborators' gaze to assess the quality of communication, the level of understanding, quality of grounding. Open questions concern whether it is possible to identify "signatures" of (in-)efficient interaction, how gaze complements other sources of data (audio, interface actions).   .

Details and links to previous issues of the DUET workshop are available online at http://www.dualeyetracking.org

PARTICPATION PROCEDURE
Participants are invited to submit methodological notes and research papers (4-8 pages) or short poster submissions (2-4 pages). All submissions will be reviewed by at least two reviewers and selected with regards to relevance and quality. Best contributions will be invited to submit extended versions to a special issue in a renowned journal (pending). Please send your contributions to duet2013@dualeyetracking.org

IMPORTANT DATES
April 15th 2013, Paper submission deadline to duet2013@dualeyetracking.org

April 26th 2013, Acceptance notification

May 1st 2013 Early Bird CSCL 2013

June 15th 2013: Workshop in Madison