

MADE-Dashboard: Visual Analytics for Multimodal Affective Educational Software

Reza GhasemAghaei
School of Computer Science, Carleton University, Ottawa, Canada

Supervisors: Ali Arya, Robert Biddle
School of Computer Science, Carleton University, Ottawa, Canada

Challenge: How can theoretical models of Human-Computer Interaction (HCI) inform affective multimodal education.

Approach: Need for software to support teachers in monitoring students to provide and engage students in learning with different affective strategies

Why MADE:

MADE Framework (Multimodal Affect for Design and Evaluation) [1]

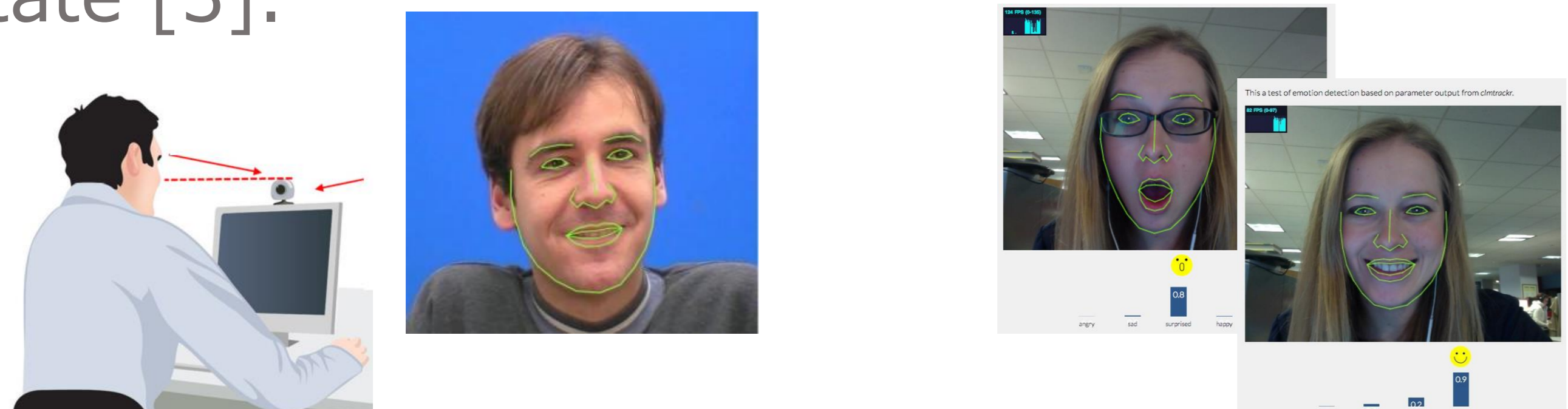
- Design Process: Goal-Directed Design (Affective Personas) and Usage-Centered Design (Affective Essential Use Case)
- Inspection Techniques: MADE Walkthrough and MADE Heuristics

Why MADE-Dashboard:

Real classroom teachers monitor their students' emotional reactions while learning, but this is difficult with educational software used online: the MADE Teacher's Dashboard addresses this gap.

Emotion Detection:

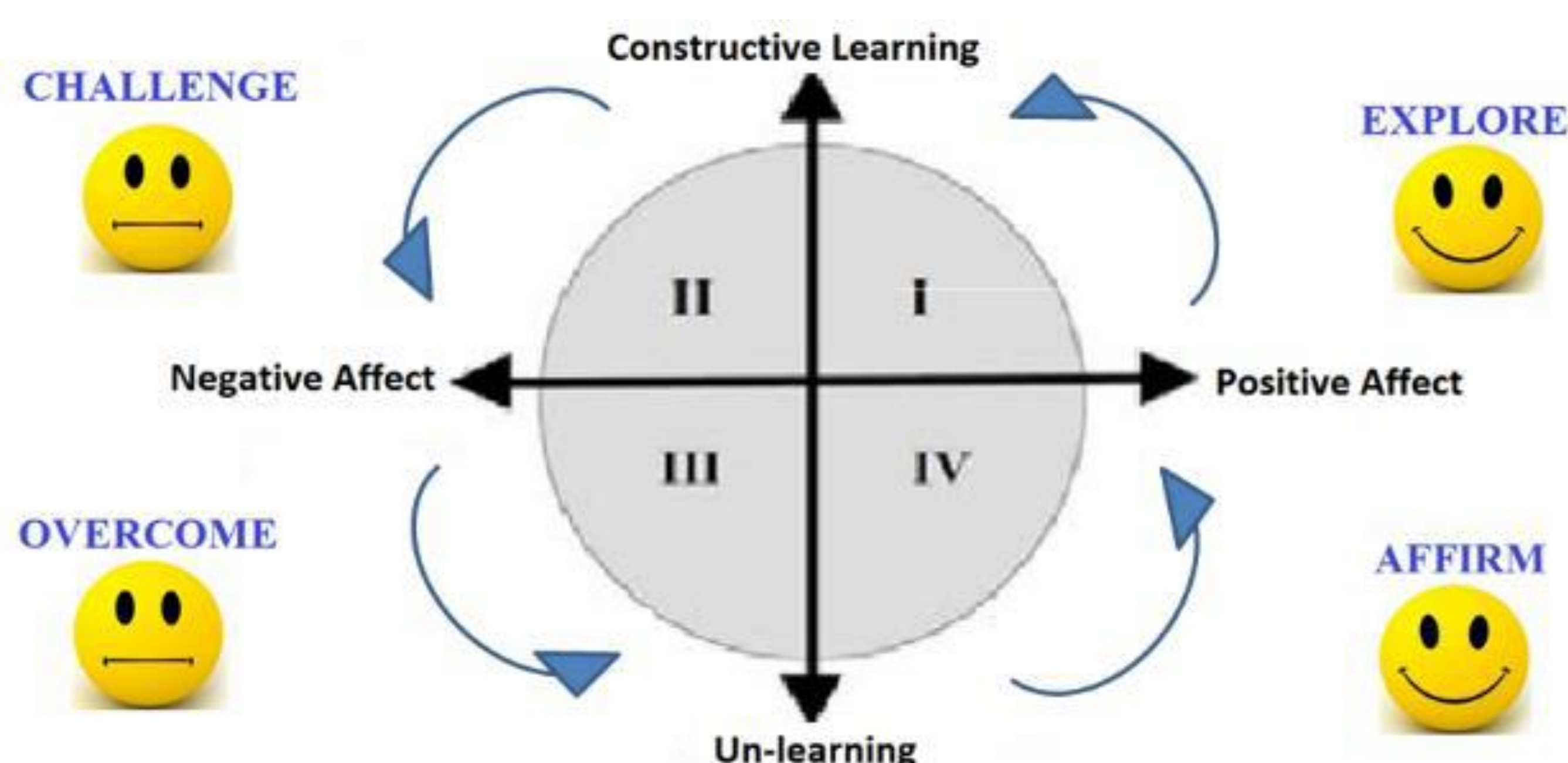
CImtrackr: Open source software that uses computer vision that recognizes emotional state [3].



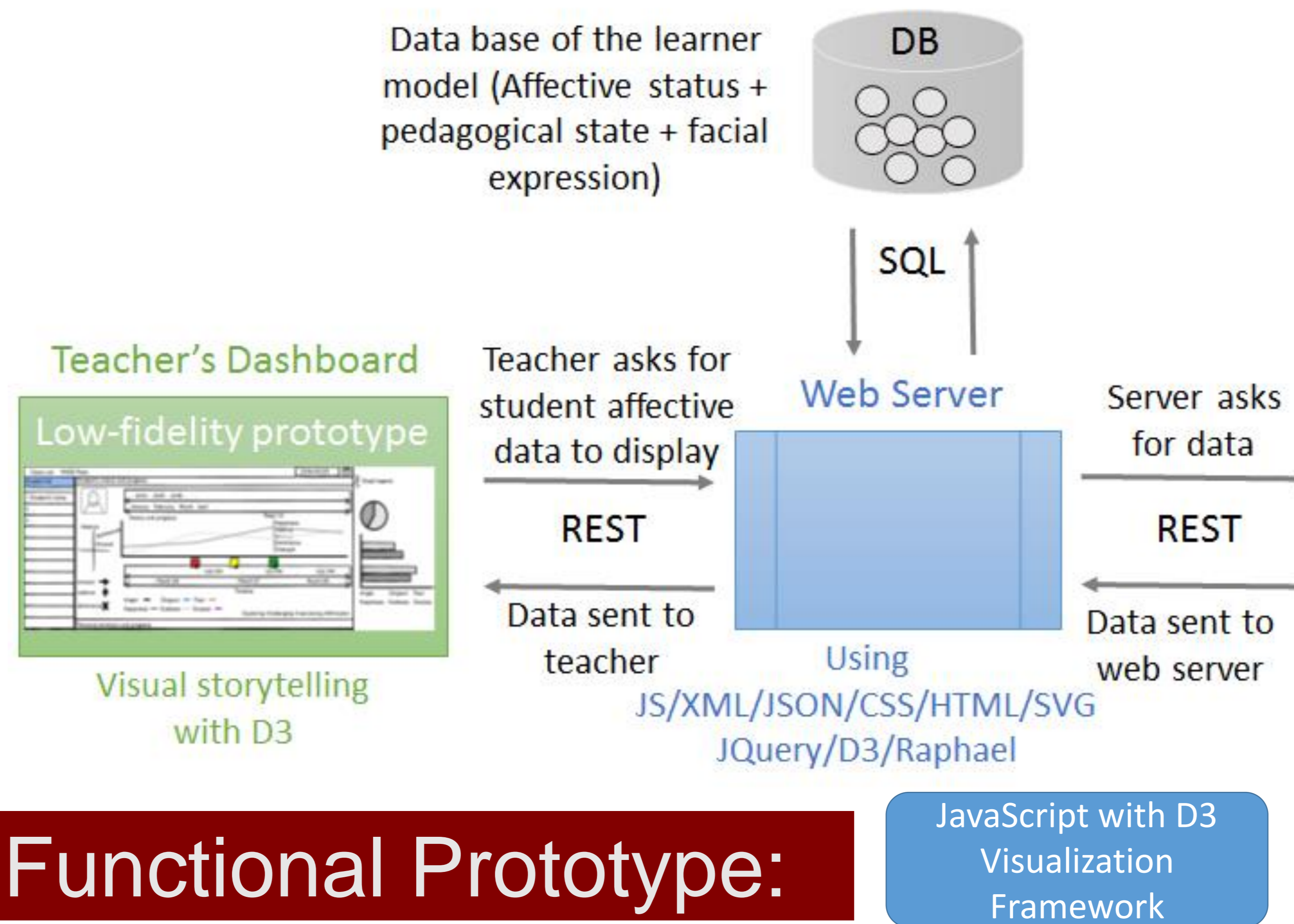
The Atlantic Jan 2014

Underlying theory:

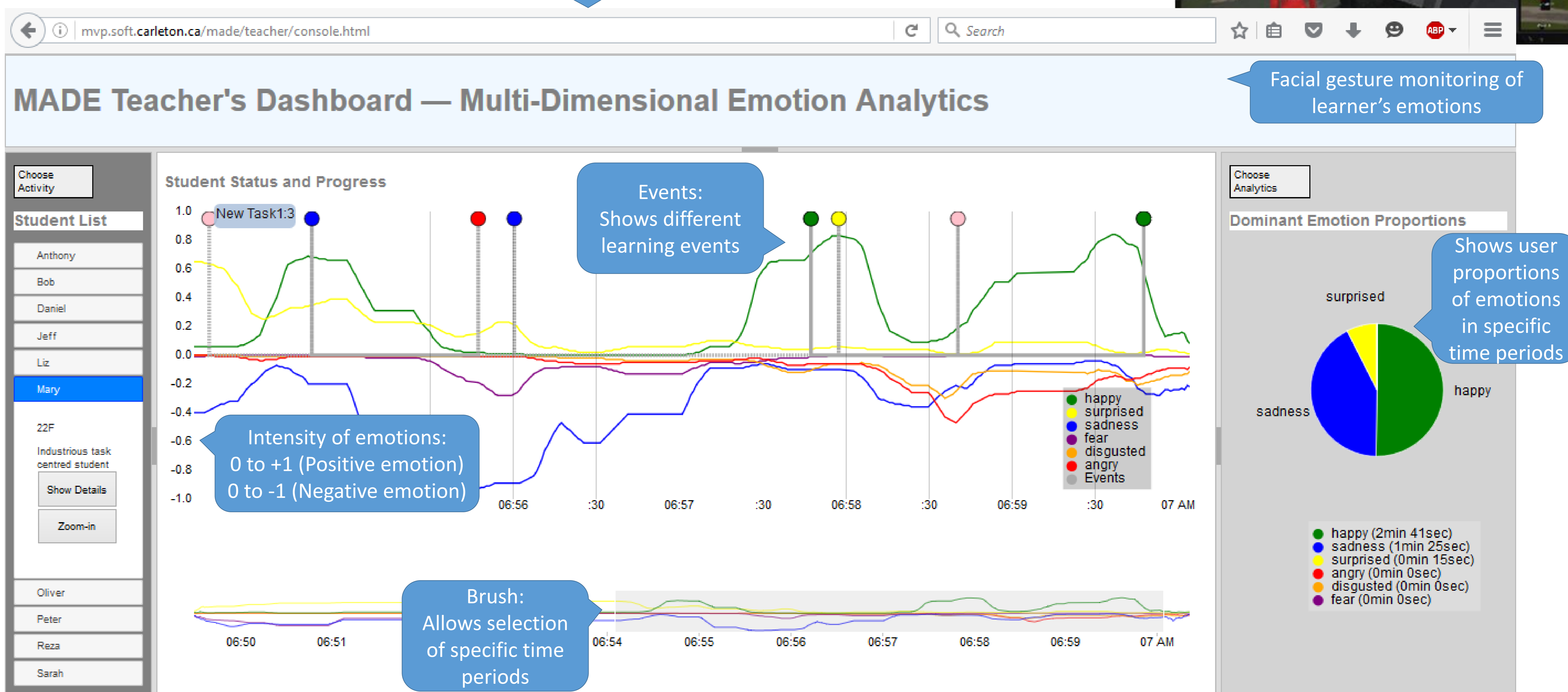
The affective model of education from Kort et al. [2] includes four phases of emotion desirable in learning:



Architecture:



Functional Prototype:



Contributions and Next Steps:

- First use of web-based emotion tracking for education software
- User studies needed
- Studies of reliability needed

References:

- [1] Reza GhasemAghaei, Robert Biddle, and Ali Arya. The MADE Framework: Multimodal Software for Affective Education, AACE, EdMedia2015.
- [2] Barry Kort, Rob Reilly, and Rosalind W. Picard. An affective model of interplay between emotions and learning: Reengineering educational pedagogy-building a learning companion, IEEE ICALT, 2001.
- [3] David Cristinacce and Tim Cootes. Feature Detection and Tracking with Constrained Local Models, BMVC. Vol. 2. No. 5. 2006.