

## GETUI

### GEstures in Tangible User Interfaces

#### Inspiration

Collaborative problem solving is defined as the capacity to recognise the perspective of other people in a group, participate, contribute knowledge, recognise the need for contributions, and build knowledge and understanding as a member in a collaborative setting. Most of the research in technology-based assessment of collaborative problem solving skills has dealt with improving the assessment of traditional skills. However, the focus should shift to so-called “21st century skills”: complex problem solving (CPS), creativity, critical thinking, learning to learn, and decision-making. ICT can provide both the solution for assessment of these skills, as well as the problem, as there is a lack of scientific and practical knowledge about, on one hand, adapting existing assessment models and, on the other hand, creating appropriate, authentic problem solving situations.

#### Innovation

Coordinated by the Luxembourg Institute of Science and Technology (LIST) and funded by the EU programme Horizon2020, the GETUI project will apply user studies to investigate the use of gestures on Tangible User Interfaces (TUIs) in the context of technology-based assessment (TBA) of collaborative and complex problem solving skills. The connection between gesture studies and TUI-based collaboration and assessment is very close, as gesturing is a natural form of communication, and communication plays a crucial role in collaborative problem solving activities. GETUI is innovative in its approach that takes into account both the lack of tools and methods for collaborative problem solving and interaction through gestures.

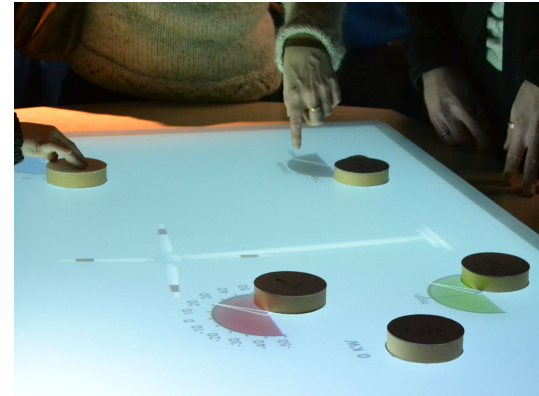
#### Impact

The coupling of gestures with TUIs for collaborative problem solving assessment is a new direction in gesture studies. Many fields use gesture in their applications, such as telecommunications, entertainment, and healthcare, making the analysis and evaluation of gestures important both financially and socially. Filling the gap in scientific knowledge, GETUI's results will be applicable for use in the PISA program, as well as in future projects and international collaborations.

#### Further information

Scientific publications:

- "COPSE: Rapidly Instantiating Problem Solving Activities based on Tangible Tabletop Interfaces", Maquil, V., Tobias, E., Anastasiou, D., Mayer, H., Latour, T. in: Proceedings of the ACM on Human-Computer Interaction 1 (1), 6, (2017).
- "A Questionnaire-based Case Study on Feedback by a Tangible Interface", Anastasiou D., Ras E. in: SmartLearn Workshop, Proceedings of the 2017 ACM Workshop on Intelligent Interfaces for Ubiquitous and Smart Learning (IUI), ACM, 39-42 (2017).
- "A Gesture Taxonomy for Tangible User Studies", Anastasiou D., Maquil V., Ras E. in: International Gesture Conference (2016).
- "A Gesture-Speech Corpus on a Tangible Interface", Anastasiou D., Bergmann K. in: Proceedings of Multimodal Corpora Workshop, LREC Conference (2016).
- "Design Implications for a User Study on a Tangible Tabletop", Anastasiou D., Maquil V., Ras E., Fal M. in: Proceedings of International Conference on Interaction Design and Children, ACM, 499-505 (2016).
- "Hand gestures during collaborative problem solving" Anastasiou D., Fal M., Ras E. in: Proceedings of the 3rd International Symposium for Movement and Computing (MOCO), ACM, 44 (2016).
- "COPSE: A framework for rapidly instantiating problem solving activities on tangible tabletop interfaces", Maquil V., Tobias E., Anastasiou D., Moll C., Latour T., Demonstration at Mensch und Computer (MUC) Conference (2016). This demo won 2nd place: [read the related news](#) for more info.



#### Partners

- German Research Center for Artificial Intelligence - DFKI (DE)
- University of Bremen (DE)
- Bielefeld University (DE)
- University of Luxembourg (LU)

#### Financial Support



This project has received funding from the European Union's Horizon2020 research and innovation programme under grant agreement no. 654477

#### Contact



Dr Eric RAS  
[eric.ras@list.lu](mailto:eric.ras@list.lu)



Dr Dimitra ANASTASIOU  
[dimitra.anastasiou@list.lu](mailto:dimitra.anastasiou@list.lu)