

Wrap-up and Conclusions from the Vienna Gesticon Workshop (Thomas Rist, Catherine Pelachaud, Brigitte Krenn)

The Gesticon workshop took place on 12. Dec. 2003 at ÖFAI in a very relaxed and friendly atmosphere. The first thing that has been changed was the agenda since people preferred to have the discussions right after and often even during the presentations. The last hour, however, has been used to summarize lessons learned, formulate conclusions, and to identify open issues. Based on notes from the workshop attendees, we list some of the outcomes below.

1. What do we talk about? Gesticon / Gestuary / Gestureary

As it is often the case, similar or better related things are often named differently by different people. While people from the NECA project use the term “Gesticon” (in analogy to “Lexicon”), for a repository of gesture definitions, people from University of Bielefeld adopted the term “Gestuary” as coined by deRuiter. In addition, the term “Gestureary” was used by Isabella Poggi (her presentation was given by Catherine Pelachaud). While it is perhaps a matter of taste how to name the child, the following issues are more severe.

2. What should go into a Gesticon ?

There was broad agreement among the workshop attendees that if gesture generation is based on some kind of a repository, then this repository should comprise specifications that relate to form as well as to the semantics or meaning of gestures and probably also their possible functions in communication. However, there are many further issues to be addressed in more detail:

2.1 Can we assume a set of “base gestures” or a fixed set of gesture primitives from which we can construct all needed gesture types and individualised variants?

2.2 Regarding individualised instantiations of gestures: what are the determining factors, and how should they be mapped onto form parameters?

2.3 Regarding gesture selection in a virtual character: should the gesture specifications in a Gesticon include weights for some parameters so that an appropriate prioritization among possible candidate gestures can be made?

2.4 What characteristics (i.e., form elements) depend on (social, cultural, professional, etc) contexts and which are independent? If context-dependencies exist, where and how should they be represented?

2.5 How to deal with iconic gestures? As Stefan Kopp pointed out, in this case it might be more appropriate to include the construction recipe in the Gesticon rather than a huge volume of iconic form elements.

3. How to structure a Gesticon ?

While there is not much hope for a single universal Gesticon to emerge in the near future (Daniela Romano gave impressive examples of the huge variations of gesture use in Italy), nevertheless it might be an advantage if the community (i.e. people building ECAs) could agree on a common structure for Gesticons. Preferably a Gesticon would comprise definitions of gesture types rather than concrete body-specific instances to ensure some reusability across different characters (embodiments). In turn, dealing with types suggests that hierarchical structuring is possible and useful too, regarding representation compactness and gesture generation. Again, the devil is in the details – here are just a few of issues to be addressed:

3.1 How should we define a gesture taxonomy? What should be the dominant discriminating criteria (e.g. form, semantics, communicative function, else)? If a multi-layered structure is introduced, how many layers should it have and what aspects should be dealt with in each layer?

3.2 What format to choose (in addition to ask for XML-compliance for the time being)? Ideally, one would have a format that allows specifications at different levels of detail allowing for incremental refinements without losing compatibility. For instance, in NECA the form part of a gesture is “grounded” by an animation clip while the character MAX computes gestures on the fly from a specification of form parameters (MURML) based on the HamNoSys approach to describe gesture form. Nevertheless, both systems could rely on the same meaning descriptions of a shared Gesticon.

3.3 How to specify parameters for synchronising gestures with other modalities? Do we need to support both time-line based and event-based synchronisation constraints?

3.4 Gesture and meaning: Catherine Pelachaud pointed out that we need computational tools for mapping between meaning and gestural signals, especially when Gesticons become more realistic in size. Isabella Poggi (slides presented by C.Pelachaud) in her recent work makes the distinction between codified (symbolic) and creative gestures, i.e., gestures which are generated on the fly. Especially handling creative gestures is a challenge for future research. One step in this direction is work on the lexicalization of gestures presented by Stefan Kopp. Here a gesture entry defines the relation between a form definition and its communicative function. A similar approach is also pursued in the NECA gesticon.

3.5 gesture and expressivity: gestures may be expressed with more or less strength; its dynamics might vary as well as its amplitude. Expressivity of gestures is really considered by cognitive as well as computer scientists researchers. Attempts have been made in biomechanics field, computer graphics (Badler; Perlin). A lot of work remain to be done in this area. A first step is to define a set of parameters to encode expressiveness. Computational models need then to be elaborated.

4. Do we need a Gesture Grammar in addition to a Gesticon?

Since gestures do not occur in isolation but usually in sequences the question arises of whether we need kind of a grammar too that entails the rules for proper gesture sequencing and perhaps blending / superimposition of some gestures.

5. Other issues

During the workshop many other issues were discussed too, such as the use of different generation approaches (both for gesture selection and gesture animation); gesture capturing: an integration of work on motion capturing and gesture classification/representation is expected to be necessary but still needs to be done, how do we bring motion capturing and procedural approaches to gesture together?; the granularity of facial expression and gesture generation needs to be adapted according to the output device (screen size); Thomas Rist pointed out that feedback from the player component to the generation components is crucial for the quality of animation output, a feature which is typically missing in current animation generation systems, this is particularly important to handle the flow of gestures/gesture generation when the user is allowed to interrupt ECA communication.

Finally, some upcoming events were mentioned which could provide an opportunity to continue the discussions on the various open issues. Links have been provided to:

-AISB workshop, Leeds? April 2004 (contact Ruth Aylett)

-AVI workshop Lecce - Italy, May 2004 (submitted by Thomas)

-Kloster Irsee (Germany), Affective Dialog Systems, June 2004 (contact Elisabeth)

- 2 AAMAS workshops (one on emphatic agents; one on Perception and Action in ECAs), N.Y. July 2004 (contact Catherine)