PhD Position in Computer Science

EXPRESSION team / IRISA, University of Bretagne Sud, France

SL-Avatar

Subject: Sign Language Avatar: Editing, Generation, Evaluation

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The PhD thesis aims at designing and animating signing avatars, i.e. virtual 3D characters signing in signed languages. This is part of a larger project dedicated to the editing and generation of digital contents useful for Deaf and hearing people signing in French Sign Language (LSF). This project is at the intersection of computational issues which aim to consider (i) innovative tools to interactively animate signing avatars, and (ii) societal issues to evaluate the produced animations, with the participation of deaf people.

This project follows an editing-generation / perception scheme. From the editing of simple sentences constructed on a limited LSF corpus, our system generates LSF movements, and simultaneously controls the animation of bodily movements, hand gestures, facial expressions, and gaze direction. With such an approach, novel sentences are built from the re-composition of movements extracted in annotated databases or synthesized according to the linguistic context. The objective is to find appropriate representations allowing on the one hand to construct intelligible sentences, following grammatical and semantic rules in LSF, and on the other hand to access, retrieve, or synthesize in real time the corresponding movements to finally control the animation of the virtual character.

The PhD project also addresses some issues related to perceptual evaluation. Different types of experiments will be conducted to evaluate the quality of the signing utterances, considering both the comprehension and the acceptance of the 3-dimensional avatar by the Deaf. The aim of the perceptual studies is not only to assess of the quality of the produced animations, but also to develop metrics, heuristics and methodologies to be used in the design of new perceptually based analysis and synthesis algorithms dedicated to signing avatars.

The issues addressed here constitute in themselves a highly original scientific problematic, valuable in terms of academic papers (conferences, journals, etc.). There is indeed very little work concerning multimodal data annotated on several levels (phonetic, phonological, syntactic, semantic, etc.). The exploitation of captured data should also help to statistically identify co-articulation and coordination patterns between the different modalities, which may be re-used for synthesis.

Workplace: this work will be conducted at the IRISA lab (EXPRESSION team) in Vannes, France.

Prerequisites: The candidate must hold a Master degree (or equivalent) in computer science. S/he should have a strong knowledge of C++ programming, an excellent level in written English, and possibly knowledge in Human-Machine interaction, computer graphics, and data processing. A knowledge in sign languages would be greatly appreciated. If not, some SL courses will be included into the PhD formation.

Funding: grant from the French Research Ministry **(**CDE)

Monthly Salary: around 1350 € (after tax)

Application: please send a CV and a cover letter with a list of references with contact details by email to Sylvie Gibet (sylvie.gibet@univ-ubs.fr) or Caroline Larboulette (caroline.larboulette@univ-ubs.fr) as soon as possible, and BEFORE April 15, 2016.

References

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