Project C02: Multimodal creativity in speech-gesture production

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Project Summary

This project aims to investigate how co-speech gesture is employed to support both speaker and listener when new linguistic constructions need to be invented and used to solve a challenging situation in communication (e.g., referring to an entity for which no conventionalized term is available and ordinary language productivity does not suffice). The project will encompass experimental studies with human speakers and the development of computational models (using machine learning techniques) of speech-gesture use.

In psycholinguistic experiments, we will systematically elicit creative speech-gesture production and restricting speakers' use of gestural forms. To investigate how creativity in one modality is enabled or conditioned by its combination with the other modality, we will use computational modelling to explore the latent space of quantised generative models that are trained on the empirical data, that capture the normal range of gesture behaviour (as predicted from the given speech input along with additional semantic information) as well as novel, creative deviations from it. We will examine how "co-creative gestures" can be characterised and generated by trained models as part of parameterised strategies of multimodal creativity. The experimental results and computational analyses will inform the development of a psycholinguistic model of creative speech-gesture production processes. Our long-term goal is to develop a cognitive model that accounts for general mechanisms of multimodal creativity in continuous speech-gesture production in relation to speaker-specific resources as well as addressee-specific needs.

Open Positions

PhD position (100%)
Profile: The ideal candidate has a master in computational linguistics, computer science or a related field, ideally with experience in machine learning techniques.
Main research focus within the project: The focus will be on the application of of deep learning and cognitive A.I. techniques to develop, train, and evaluate computational models for co-creative speech-driven gesture generation. The PhD student will be involved in the data collection and corpus building as well as in the development of the theoretical model, including data annotation, statistical and model-based analyses, and objective/subjective evaluation of the predictive computational model.

PostDoc position (100%)
Profile: The ideal candidate has a PhD in linguistics or a related with a focus

on experimental psycholinguistics and experience in computational modeling.

Main research focus within the project: The PostDoc will design and conduct all behavioural experiments and will be responsible for the annotation and data analyses. Together with the computational analyses the experimental studies will aid the project's goal to develop a cognitive-computational model that accounts for general mechanisms and processes of multimodal creativity.

For further information please contact the project leaders:

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