

# Master thesis

## „Analysis of movement behavior during conversations in a social context”

**Background:** Motion behavior, especially head motion behavior, is important for the understanding of hearing aid benefit: Directional microphones typically amplify sounds from the frontal direction and attenuate sounds from the back hemisphere. However, humans do not always point their head towards the direction of interest – parts of the orienting towards a source are done with the eyes, and it is also known that in multi-talker communication situations listeners look only in about 67% of the time towards the active speaker. Motion behavior can be systematically measured in the laboratory. Here it is important to present acoustic and visual cues. However, it remains unclear how social factors influence movement behavior in lab experiments, and how this interacts with the complexity of audiovisual stimuli.



**Aim:** You will learn how to plan and perform motion behavior experiments in the lab. Results will allow a deeper insight into the relation between communication-related movement behavior, virtual audio-visual environments and social factors.

**Approach:** Previous studies (Hadley, 2019) have shown that participants move closer to each other with increasing noise level. In this master thesis you will use motion tracking systems and reproduction of virtual audio-visual environments. The effect of social factors can be assessed by replacing one conversational partner by a virtual simulated character, controlled in real-time by the speech signal of the real conversational partner, and will be compared to the study of Hadley (2019) without visuals. Experiments will be performed with test subjects (young normal hearing listeners).

**Required background and skills:** Matlab skills, basic understanding of digital signal processing, and a general interest in working with state-of-the-art technology.

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**Literature:**

Hadley, L. V., Brimijoin, W. O., & Whitmer, W. M. (2019). Speech, movement, and gaze behaviours during dyadic conversation in noise. *Scientific reports*, 9(1), 10451. (<https://www.nature.com/articles/s41598-019-46416-0>).