

Title:

"Relating Soundscapes and Neural Data in Everyday Life: Challenges and Innovations in Capturing and Using Neural Activity Beyond the Lab"

Abstract:

This presentation delves into the evolving field of mobile EEG (electroencephalography), focusing on exploring the neural basis of sound perception in everyday settings. Central to this exploration is the use of ear-centered EEG technology, exemplified by devices such as the neliGrids and the innovative nEEGlace system which facilitate the recording of neural responses to natural and experimental sounds outside traditional laboratory environments. The talk outlines the challenges of transitioning from controlled lab settings to dynamic real-world conditions, emphasizing the importance of developing robust, discreet, and wearable neurotechnology. The presentation highlights our recent advancements in EEG sensor and recording system developments that allow for extended data acquisition and the implications these have for advancing our understanding of both healthy and pathological neurophysiological processes in daily life. Finally, it considers the broader impact of these technologies on future research directions, potential industrial applications, and the development of personalized medical interventions.

Bio:

Dr. Martin Bleichner is a researcher in the field of cognitive neuroscience. He holds a Bachelor's degree in Cognitive Science from the University of Osnabrück and a Master's degree in Cognitive Neuroscience from the University of Utrecht. His Ph.D. focused on decoding the acts of language production, where he utilized high-density ECoG and high-field fMRI and also contributed to the development of the first fully implanted brain-computer interface.

Since 2013, he has been affiliated with the University of Oldenburg. Initially, he worked as a postdoctoral researcher in the "Excellence Cluster Hearing4All," where he played a key role in developing the cEEGrid, an ear-centered mobile EEG system. In 2019, he was awarded the prestigious Emmy Noether Fellowship and now leads the "Neurophysiology of Everyday Life" research group. His current work focuses on perception-based noise dosimetry and using mobile (ear) EEG to study neural activity in real-world settings, emphasizing long-term temporal dynamics and auditory perception.