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## **Exploring foreign language interaction and neural alignment through simultaneous dual-brain imaging**

*Saturday, 18 May 2024 15:40 (30 minutes)*

Spoken interactions, including turn-taking activities, discussions, task-based learning, and computer-supported collaborative learning, are common in foreign language learning classrooms. However, the neural mechanisms underpinning such foreign language exchanges remain insufficiently explored. Consequently, questions arise regarding the emergence of neural alignment between activity partners and its potential contribution to mutual understanding and the quality of communication. Advances in technology allow researchers to assess these interactions from a two-person perspective as opposed to the single person studies of the past. This presentation will begin by explaining the use of simultaneous dual-brain imaging –hyperscanning –to investigate the dynamic neural activity of two or more interacting individuals and briefly outline some of the recent research in this emerging field. Next, I will outline my own ongoing research using dual electroencephalography (EEG) recordings in an English as a foreign language context and share preliminary findings, including how machine and deep learning models show promise for analyzing dual-imaging data. Following this, I will look at what can be learned from functional brain connectivity patterns. Finally, I will address the implications and limitations of using this technology, along with ethical considerations as researchers investigate one of the last preserves of human privacy.

### **Keywords**

English as a foreign language, brain imaging, neural activity, brain connectivity, EEG

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