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| Paper ID:    | BMEiCON2024-002                                                                                                                                                            |
| Paper Title: | The Analysis of Brain Activity during Inner Speech of Vowel and Directional Prompts                                                                                        |
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#### Abstract

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In this study, we performed EEG analysis of auditory recall tasks in Japanese to enhance the performance of Brain Computer Interfaces (BCI). We collected EEG data using Japanese vowel and direction prompts and conducted coherence analysis and Event-Related Spectral Perturbation (ERSP) analysis. The results showed that coherence in the high gamma band significantly increased during auditory recall for both types of prompts compared to baseline. Although the coherence difference between the vowel and direction prompts was small, with values within 0.05 across most channels, ERSP analysis revealed that specific electrodes were activated during auditory imagery of vowels. This suggests that auditory recall affects a broad network in the brain.

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