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Comparison of strategies to elicit motor imagery-related brain patterns in multimodal BCI settings

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Poster #549.04

Introduction

• Seven healthy subjects (27.2 +/- 2.1 years old, 1 Male)
• 2 sessions
• 1-2 weeks between sessions
• 64 BrainAmp Active electrodes – TP9/TP10 REF/GND

Methods

• 1 run : 8 min
• Feature selection : 5 min
• MI/Rest Task : 4s
• Red dot : Motor Imagery Task
• Blue dot Resting state
• White cross : selection of the target with gaze

Classification Results

• No Statistical differences between sessions ➔ No Effect of learning
• No Statistical differences for SVM ➔ Trend on LDA
• 2 ways permuted ANOVA, p < 0.01

Conclusion

• Differences between strategies: a way to improve the performances
• Being in control of the robot changes the statistical differences in frequency more than in intensity

• High variability within the resting state between trials ➔ Motor imagery task more redundant between trials
• The Resting state instruction remains to tackle for more consistency

• Synchronization related to robotic arm movement, ➔ A possible pattern of preparation/pre-trigger

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