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

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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: 4 s
• 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
• 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

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