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

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Introduction

Methodology

- 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

- Task: Motor Imagery of the Right Hand
- Acquisition: EEG to capture brain patterns corresponding to the task

Feature selection: Power Spectrum at specific frequency for specific electrodes

Classification: Discretisation between classes: feedback based on probability to belong to a class

Active Feedback:
- Control of devices, the nature of the feedback influences the performances

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