

Preface

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Abstract

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Brain-Computer Interfaces

1.1 Rationale

1.2 Overview & state-of-the-art

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1.3 Visual Event-Related Potential based BCIs

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Chapter 2

Linear ERP decoding

2.1 LCMV-beamforming

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2.2 Toeplitz-LDA

2.3 Other methods

Chapter 3

Gaze-independent BCIs

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- 3.2 Gaze-independent visual BCIs**
- 3.3 Benefits & drawbacks of covert attention in BCI operation**
- 3.4 Electrophysiological correlates of covert attention**
- 3.5 Compensating for covert attention**

Chapter 4

Problem statement & rationale

Goal: Enable communication for eye-motor impaired patients

Method: Design a comfortable interface that allows them to maximally exploit their residual gaze capabilities, by leveraging a non-invasive high-ITR visuospatial ERP-based BCI and improving ERP decoding performance (in general and specifically in gaze-independent settings).

Novelty:

Part II

Algorithms & Decoders

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12.2 Limitations

12.3 Future directions

12.4 Working with patients

12.5 Conclusion

Curriculum vitae

Publications

Funding & acknowledgments

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Personal contribution

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Conflict of interest

The authors declare no conflict of interest.