Brain Racer

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Outline

Project

Classification scheme

Experimental setup

Results

Discussion

Problem Description

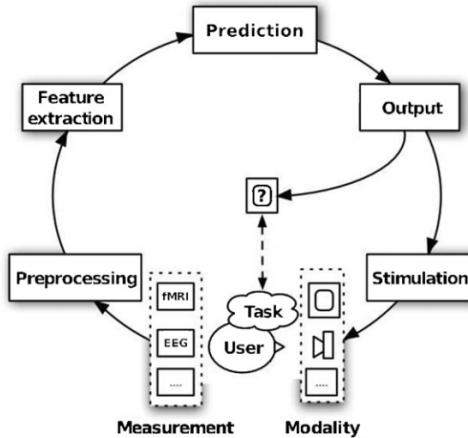Cybathlon: robust zero training classifier

Foreseen challenges

- Covariate shift, Bickel et al. 2009
- BCI-performance in general
- Generalisability between subjects
- Online classification
- Within subject variation

BCI cycle

Preprocessing + Feature Extraction

- Preprocessing
  - wop
  - wopwop
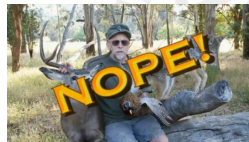- Feature Extraction
  - wop
  - wopwop

Prediction

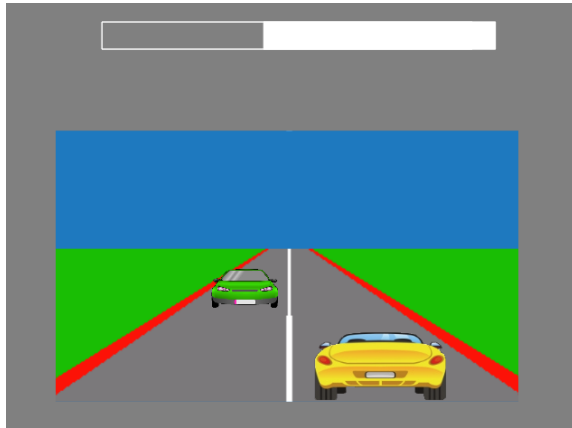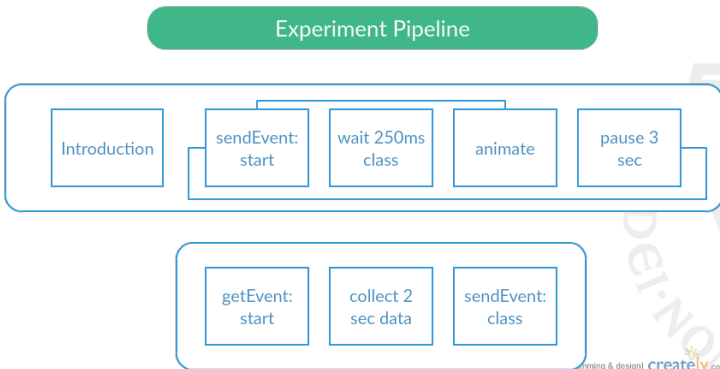- List all attempted classifiers
- Performance?

Prediction

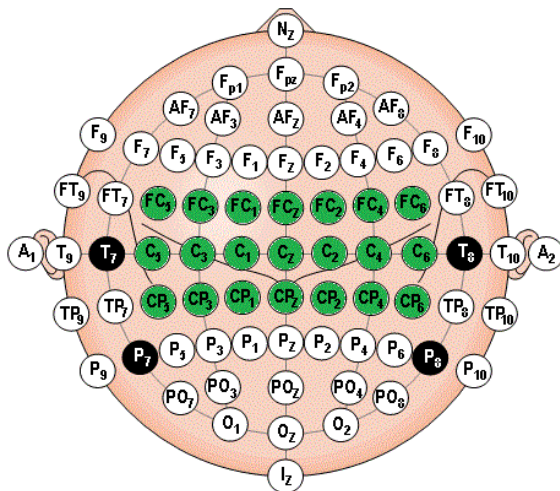- List all attempted classifiers
- Performance?

Stimulation

Pipeline

Experiment Pipeline

Introduction — sendEvent: start — wait 250ms class — animate — pause 3 sec

getEvent: start — collect 2 sec data — sendEvent: class
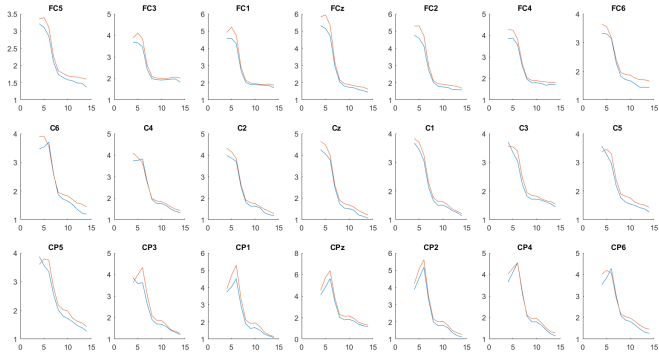
Electrode selection
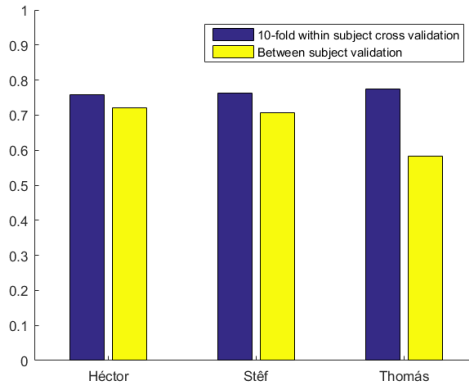
2 ways of validating

- Between: Trained on 2 $\rightarrow$ tested on 1
- Within: Cross validated on each subject
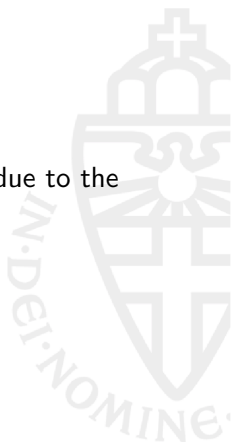
WOPWOP

AWWW YEAH

Discussion

- Adaptive approach produced sub-optimal results due to the necessity of unsupervised learning

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Take home message

The adaptive approach did not work well but decent results were
still obtained without training on the specific subject