TRACK B
(Vizlab)

New EEG tools and measures

John Iversen et al.
(repeat)

2:30 PM -- B1: Automated source classification and online ICA - Luca Pion-Tonachini

2:55 PM -- B2: EEG Nonstationarity and AMICA - Shawn Hsu

3:15 PM -- B3: MEG and Joint MEG/EEG source decomposition - John Iversen

3:30 PM -- Coffee break

3:50 PM -- B4: Phase/amplitude coupling (PAC) - Ramon Martinez-Cancino

4:20 PM -- B5: Neuroinformatic methods to enable large-scale EEG data analysis (BIDS, HED, and beyond) - Nima Bigdely-Shamlo


5:20 PM -- B7: EEG Meta-Analysis Q & A - Makeig, Bigdely-Shamlo, Majumdar
**Luca**: Automated source classification and online ICA

Solutions:
1) IC classification is subjective & laborious, especially for massive datasets
2) ICA computed on entire experiment assumes stationarity

**ICLabel** – classify ICs automatically

**ORICA** – real-time ICA

**REST**

Clean streaming data in near-real-time

Luca Pion-Tonachini, SCCN, UCSD - 2018 EEGLAB Workshop
Shawn: EEG Nonstationarity and AMICA

• Why AMICA?
  1. Better IC decomposition than Infomax ICA
  2. Model EEG non-stationarity & brain-state changes

A. Theory & Applications

B. Practicum

2 plugins (AMICA & postAmicaUtility) + run on Neuroscience Gateway (NSG)
John: MEEG Analysis in EEGLAB
Ramón: Phase Amplitude Coupling (PAC)
Solution: Adding advanced measures of cross-frequency analysis to EEGLAB through plugins
This presentation will cover several enabling neuroinformatics technologies, including Hierarchical Event Descriptors (HED) and EEG Study Schema (ESS), for automated large-scale EEG analysis. HEDTools EEGLAB plugin for event tagging and epoching will also be introduced.
Neuroscience Gateway

- Providing access to neuroscience tools and software
- Tools and software optimally installed on various high performance, high throughput and academic cloud resources
- Neuroscientists can easily – via an easy to use web interface – use these tools and software on supercomputing resources free of charge
- Programmatic access also available
- Used for large scale modeling and data processing

Results of processing 87 128-channel EEG data sets from the Child Mind Institute database. Alpha power decreases with age (age groups in years shown in columns) in both eyes open and closed conditions (rows).