



# ViBS

## VISION AND BRAIN SIGNAL PROCESSING

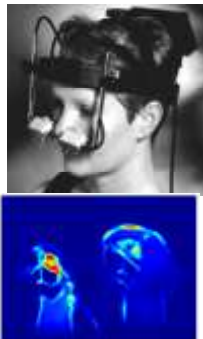
LEADER

**Anne GUERIN****1 researchers**(CNRS)**4 professors** (UJF, Grenoble INP)**1 ingeneer** (CNRS)**9 PhD, 1 postdoc**

## Methodology for brain activity processing related or not with visual process

### RESEARCH TOPICS

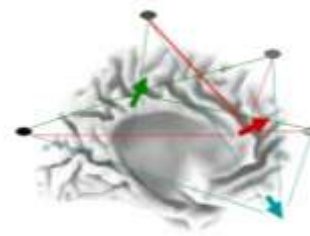
- ◆ Methodology for brain signal processing
- ◆ Functional and cognitive Model for visual perception and vision
- ◆ Brain Computer Interface and Neurofeedback



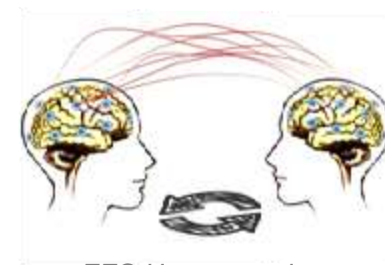
*Scene exploration, visual saliency on static, dynamic, audiovisual and stereo scenes*



*Brain Computer Interface*



*EEG signal processing, Sources localization*



*EEG Hyperscanning*

### KEY POINTS

- ◆ 1 member of “Institut Universitaire de France” (C. Jutten)
- ◆ Coordinator of ANR project “Gaze&EEG” (EEG signals and eye movements )
- ◆ Collaboration with “Association Française contre les Myopathies ”
- ◆ International collaborations (Deutschland, England, Belgium, USA, Austria, Australia, Iran)



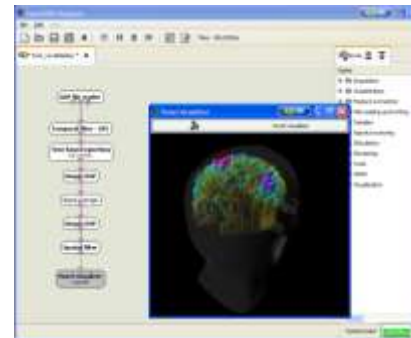
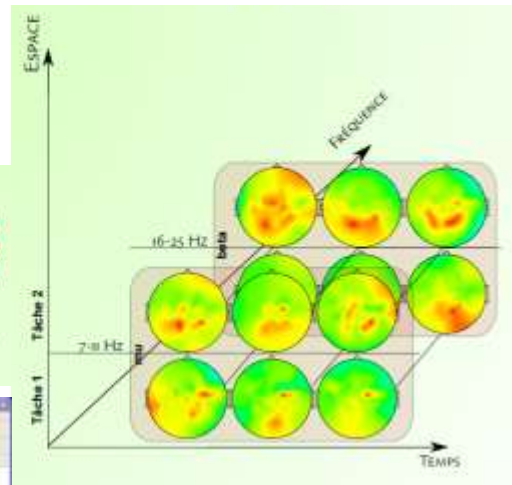
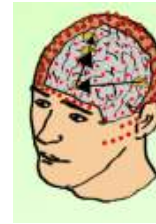


## APPROACHES

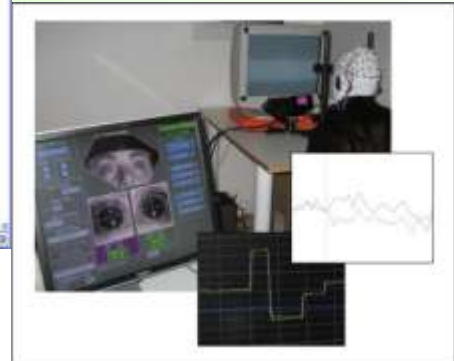
- ◆ Statistical signal processing, Blind source separation
- ◆ Multidimensionality and multimodality
- ◆ Extraction et real time classification of mental states through EEG markers
- ◆ Real time adaptive commands of the interface
- ◆ High resolution EEG, Hyper scanning EEG
- ◆ Visual scene exploration by spatiotemporal analysis of eye movements and EFRP with EEG
- ◆ Behavioral experiments: Eye tracking, EEG, IRMf

➔ **Experimental platform : PerSee**  
 Visual Perception et Image Quality, Eye tracking, EEG, OpenVibe

Statistical processing of brain signals



Acquisition and joint analysis of eye tracking and EEG data, Sources reconstruction .



*Publications: IEEE Trans. on Signal Processing, on Biological Engineering ; Int. J. of Psychophysiology, of Computer Vision ; Vision Research, J. of Vision ; NeuroImage ; Brain Topography ; Psychological Research ; J. on Eye Movement Research ; Pattern Recognition*

