DATAPLASTICITY
and
RAINNE
Real and Imaginary
Neural Network Exchange

A Signal Processing method based on Striatal Beat Frequency banking as an aid to improve classification methods for Brain-Computer Interfaces in the context of BCI Competition EEG datasets specific to responses to intensifications of alpha-numeric characters in a matrix.

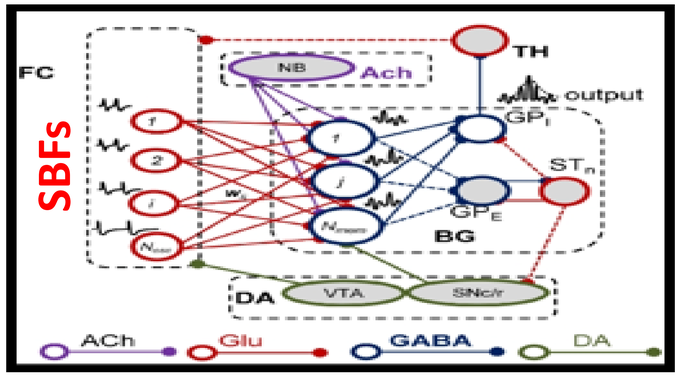
James P. LaRue – CEO Tom Tavernetti – CBO

F.05.b. BMI neurophysiology – Decoding, neurophysiology, and processing

DATAPLASTICITY
The Bending of Number

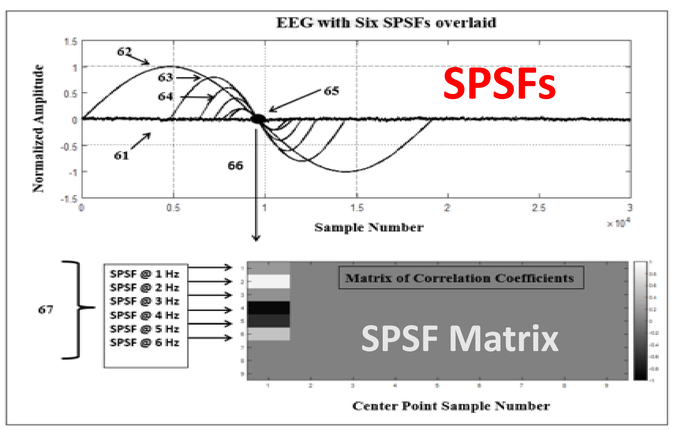
Background

Duke's Matell, Meck, & Buhusi developed EEG concept of STRIATAL BEAT FREQUENCIES



Method

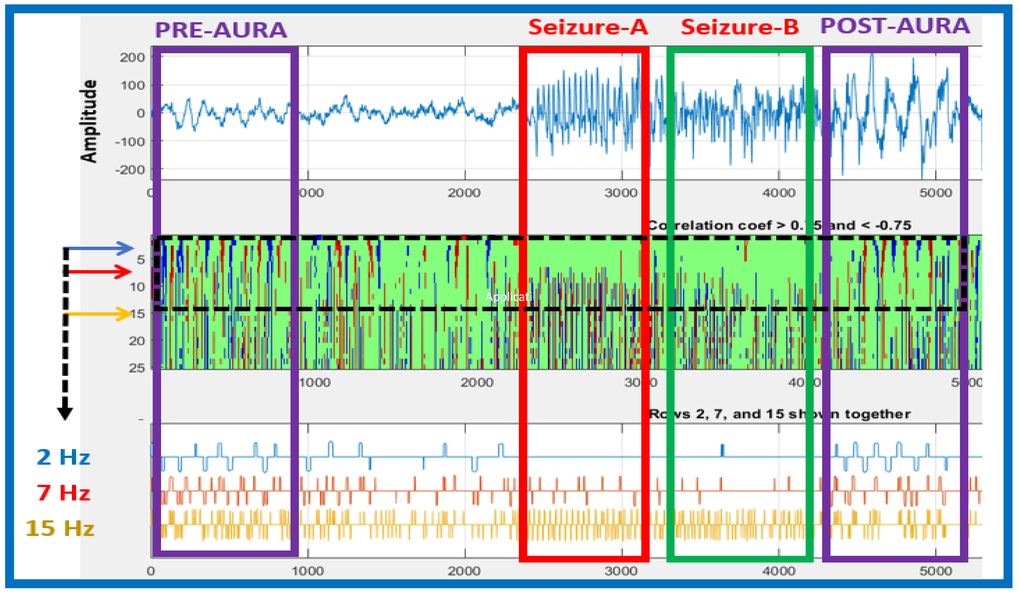
Slide EEG through selected bank of Single Periods of Single Frequencies, recording CorrCoef point-by-point

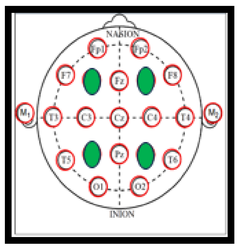


Patent No. US 11,179,085 B2

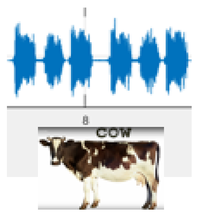
Previous Applications

Detected Pre/Post Epileptic Seizure Aura Beats
256 Hz Seizure data from Chb-MIT and Temple Univ

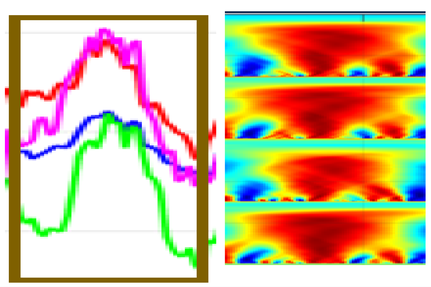




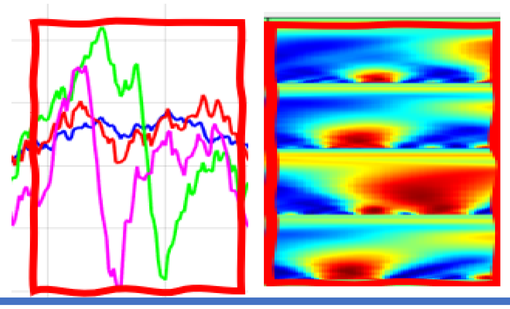
Unsynchronized EEG
Nodes sampled at 9600 Hz
AV-ON/OFF Cow "Moo"
Courtesy G-tech Albany



AV OFF
EEGs (Synched) SPSF

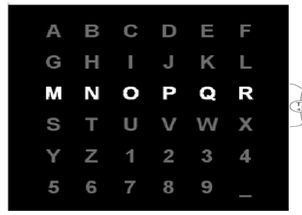


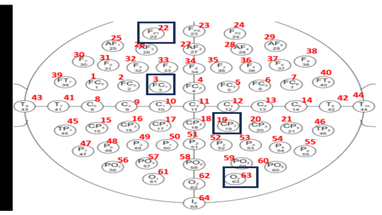
AV ON
EEGs (Un-Synched) SPSF



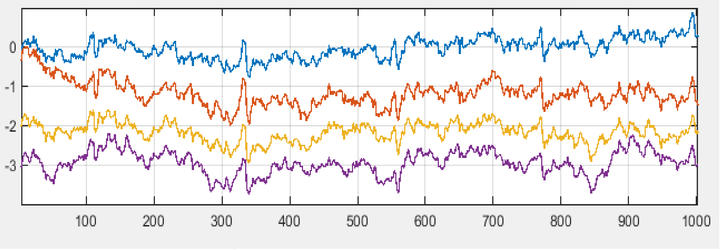
Present Application

BCI Competition Data at 240 Hz

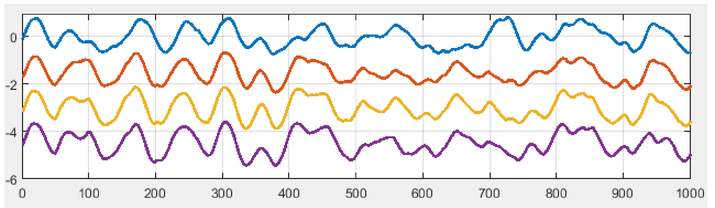




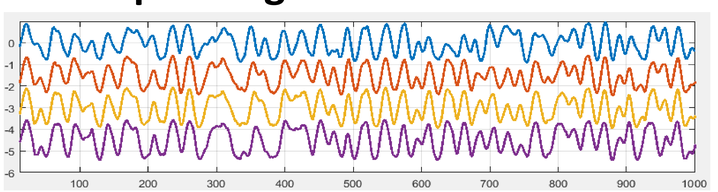
Example Raw EEGs from Subject A



Corresponding 4 Hz SPSF time series



Corresponding 10 Hz SPSF time series



Conclusions

The SPSF method yields personalized HCI information, and mitigates the smearing effects Wavelet convolution and DFT averaging.

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