# Technology Offer

BRAIN   DYNAMICS

NEED: Electroencephalography is a trustable, cheap and easy-to-use method to study the brain function in a non-invasive way. However, there are a lot of variables that human eye (even the most trained one), cannot assess. Among these, most of the related to synchronization, asymmetries between hempispheres and lobes or frequency composing of traces (i.e, power spectrum). Nevertheless, these variables are strongly related to pathologies, so its knowledge is very interesting for clinicians. Fortunately, there are numerous mathematical tools that can help to analyse EEG recordings. Usually, these tools are known as quantitative EEG (qEEG).
Therefore, it is extremely important in clinical practice to objectively know, as most as possible, electroencephalographic variables related to brain dynamics.

PROBLEM: qEEG has been successfully applied in intensive care units, in the diagnosis of dementia, attention deficit hyperactivity disorder, psychiatric disorders (like schizophrenia, obsessive-compulsive disorder or depression), epilepsy or sleep. However, most of these developments are not used in clinical practice, probably because they do not reflect what clinicians need: an easy and diagnose-oriented tool that can reasonably translate from numerical results to electroencephalographic diagnoses.

SOLUTION: An integrated system specifically devoted to evaluating clinical aspects of EEG will help to physicians to improve accuracy in diagnosis. **Dr. Jesus Pastor Gómez**, PhD, MD (Head of Clinical Neurophysiology, Hospital Universitario de La Princesa) and **Dr. Lorena Vega Zelaya**, PhD, MD (Clinical Neurophysiology, Hospital Universitario de La Princesa) have developed an algorithm for qEEG analysis, functional and topographically oriented, based in brain rhythms properties and connectivity. Results obtained with this program are straight forward and easily translated to electroencephalographic results and will help in the patient diagnosis. On the contrary to most of numerical methods, the underlying mathematical methods are easy, robust and well known by the most of clinicians.

CURRENT STATUS: We are using preliminary versions of the algorithm from 2016. We have increased the accuracy of EEG results with numerous spectacular diagnosis, confirmed by clinical outcome after treatment. At this moment, we are writing these results concerning to different pathologies, among which we have neurocritics patients, primary aphasias and dementias or epilepsy.
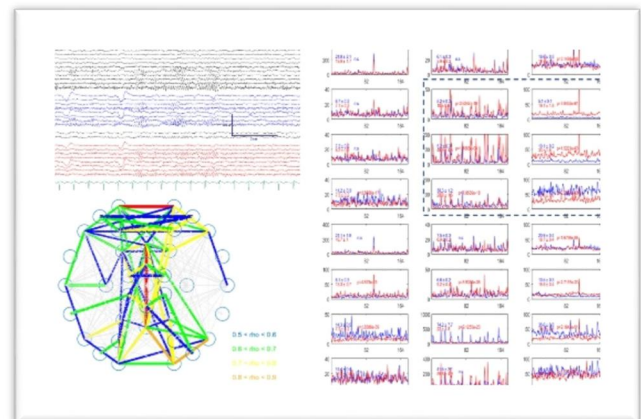
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IPR STATUS: Spanish patents applied on 22 December 2017

TYPE OF PARTNERSHIP CONSIDERED: Licensees, co-developers or investors.