# Graph Theory Complex Networks and Source/Sensor Analysis for (Real Time) Cognitive Workload Assessment

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**Summary:** In this work, we present results that advocate the use of graph theory and complex networks models for brain connectivity analysis and we superiority of small world model over random and hierarchical ones. In a systematic approach we have analysed off line and in real time the fatigue development and we have proposed biomarkers and source localization methodologies for best results. We started using wet electrodes and wired EEG systems and in next round of experiments we used dry electrodes and wireless EEG systems to monitor, real time, biomarkers in smart phone.

**Conclusions:** The prefrontal and frontal brain areas are mostly affected by fatigue and cognitive workload and biomarkers related with the sensors located close to these brain areas can be used for real time monitoring of the fatigue.

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