Development of an automatic drowsiness monitoring system based on EEG and EOG signals, and preliminary tests in a professional driving simulator

Clémentine FRANCOIS, Jérôme WERTZ, Jacques G. VERLY

Laboratory for Signal and Image Exploitation (INTELSIG), Department of Electrical Engineering and Computer Science, University of Liège, Belgium

PROBLEM

• 1/3 of fatal accidents on highways [1]
• 100,000 crashes per year in USA [2]
• 6-11% of the population suffer from Excessive Daytime Sleepiness (EDS) [3]

DROWSINESS MONITORING SYSTEMS

Major issue: Validation
“Gold standard” = EEG + EOG

OUR EEG-EOG BASED SYSTEM

Experiments and Results

Primary application: Validation; Secondary application: Real-time monitoring

EXPERIMENTAL SETUP

DEMAND AND MARKET

• Demand: ASAF, ITSRE, Caterpillar,…
• Market: 1,000,000 trucks in EU and 2,000,000 trucks in USA

REFERENCES