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Wearables for EEG monitoring

Available Technologies

Wearable with novel highly accurate sensors

For long term monitoring of electrophysiology signals with improved sensitivity.

Wet EEG electrodes that use an electrolyte gel to form a conductive path between the skin and electrode to reduce the electrode-skin impedance provide a good quality EEG signal for only a short duration. Current electrodes for in-home electrophysiological monitoring use dry sensors that result in high impedance giving a poor signal quality due to noisy data and their performance decreases over time.

Expensive amplifiers are needed to improve the signal-to-noise ratio of hydrogels that dry out within several hours. A solution is required to improve the quality of electrophysiology signal data obtained over time which will enable continuous monitoring useful for diverse applications including stress management, performance optimisation and outpatient monitoring of mental health conditions and neurodegenerative diseases.

Technology overview

We have developed highly accurate and sensitive novel electrodes that are state of the art to detect electrophysiological signals from the brain, heart and muscles. The electrodes exhibit stable performance over weeks instead of hours, have ten times better signal than commercial electrodes without the need for expensive amplifiers or hydrogels and produce better quality data over a longer term than state of the art electrodes. The electrodes compromise novel functionalised materials with a state-of-the art designing concept.

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Benefits

- 4x the highest signal to noise ratio of commercial electrodes
- Remain hydrated for weeks enabling long term use
- Biocompatible
- Easy and cheap to fabricate
- Versatile and adaptable to a range of wearable and clinical devices

Applications

- Wearable to detect electrophysiological signals from the brain, heart and muscles
- Improved EEG, monitoring brain signals for earlier and more accurate detection of mental health disorders and Alzheimer's
- Accurate detection of mental states, stress management, training and performance optimisation
- At home monitoring of electrophysiology signals with an aesthetically pleasing, comfortable, portable device

Opportunity

We are looking for collaborative partners for the development, manufacturing and commercialisation of the technology. We plan to commercialise the technology via formation of a spinout company.

Inventors

Professor George Malliaras

Eleni Mitoudi Vagourdi

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Patent

European patent application number 23386001.4 was filed on 12 January 2023.