Epilog technology improves diagnosis of epilepsy using automated EEG analysis

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Credit: imec

Epilog, a spin-off from imec and Ghent University, is launching its platform that improves epilepsy diagnosis through an automated service that accurately and efficiently analyzes large amounts of EEG-data. The new platform enables doctors to make well-informed patient treatment decisions. Proven in clinical trials and welcomed by the physician community, interest in Epilog has grown internationally, and to-date, the solution is being tested in seven hospitals within Europe.

Epilepsy, a condition characterized by uncontrolled brain activity, is a complex pathology that occurs in many different forms. The screening and treatment of epilepsy is a difficult and time-consuming process. Moreover, about one third of the patients suffer from so-called pharmaco-resistant epilepsy, meaning that they cannot be treated with medication. Brain surgery is currently the best treatment for these patients, however, hospitals are faced with long waiting lists and limited resources that result in treatment delays of up to a year or more.

"The electroencephalogram, or EEG, is one of the cornerstone techniques to diagnose epilepsy," stated Gregor Strobbe, co-founder of Epilog. "Unfortunately, the interpretation of EEG data is a labor-intensive and subjective process. Epilog's technology can automatically detect epileptic phenomena in the EEG recordings and localize their origin in the patient's brain. The doctor can use this information to make the most well-informed treatment decision, such as medication or [brain surgery](link)."

Using the Epilog service is easy: Epilog receives the EEG-data of the patient, analyzes the data and provides a standardized report with the results. The platform architecture is entirely cloud-based, allowing time-efficient detection and 3-D visualization of the epileptic phenomena. Furthermore, the Epilog services are user-friendly and overcome the need for hospitals to invest in technical know-how and computation power. To-date, 75 test cases have been offered to Epilog and the results have been very promising. In a retrospective study it has been shown that Epilog's technology achieves a sensitivity of 86% to localize the epileptic focus in the patient's brain.

"The reliablity of our results stems from more than 10 years of research in optimizing EEG analysis methods at Ghent University," explained Pieter van Mierlo, co-founder of Epilog. "Thanks to our close collaboration with Ghent University Hospital, we have gained a

multitude of insight. Currently, physicians are testing our solution in hospitals across Europe and we anticipate being a key technology that supports their treatment of epilepsy patients."

With the financial support and guidance of investors Walter Mastelinck, founder and CEO of Transics, and Patrick Keereman, CEO of Molecubes, Epilog has now started commercializing its software. CE and FDA labeling is also in progress, to allow introduction into the international epilepsy market.

"Epilog is at the precipice of a new generation of technologies that improve neurological disease diagnosis," commented Vincent Keeremen, co-founder of Epilog. "Our intention is to use our platform to tackle other applications in neurology. Early detection of neurodegenerative disorders such as Alzheimer's disease, or the prediction of the efficacy of neurological medication may be feasible and therefore, advance treatment."

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