

Research Project

Integrating Automated EEG Analysis & Standardized Reporting in Clinical Diagnostics & Longitudinal Monitoring

Third-party funded project

Project title Integrating Automated EEG Analysis & Standardized Reporting in Clinical Diagnostics & Longitudinal Monitoring

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Organisation / Research unit

Departement Mathematik und Informatik / Informatik

Department

Project start 01.12.2020

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Status Completed

The goal of the startup is to provide software solutions for analyzing electro-encephalographic recordings (EEG) incl. sleep EEG. EEG has shown great promise in trial stratification, patient monitoring, diagnosis and prognosis of neurodegenerative diseases and diagnosis of mental disorders. The targeted customer groups include researchers, neurologists working in a clinical setting at hospitals or in private practices and institutions or pharmaceutical companies conducting medical trials. According to today's standard, EEG is analyzed visually and findings are reported in free-text format, which results in two major disadvantages: (i) Visual inspection is highly time consuming and dependent on the reviewer profile in terms of experience. Furthermore, visual inspection suffers from low inter-observer agreement. (ii) The free-text format for the reporting of findings is - by definition - non-standardized. As a result, reports are less objective and more difficult to compare. These problems are addressed by combining methods for automated EEG analysis with standardized reporting formats according to recommendations by the International Federation of Clinical Neurophysiology. Although these recommendations are not new, their widespread adoption has been slowed as it would not provide time-savings during routine clinical analysis. Nevertheless, several studies show that significant patient benefit occurs when transitioning from free-text reporting to standardized reporting. Important advantages include higher inter-observer agreement, lower number of misdiagnoses and a reduction in unnecessary referrals. As the combination of standardized reporting and automated analysis enables significant time-savings, widespread adoption becomes much more likely. Ultimately, the goal is to provide a cloud-based software-solution for automated EEG analysis and standardized reporting. By targeting existing reimbursement codes for EEG analysis, the offered services fit into existing reimbursement schemes which facilitates their adoption. The user interface is designed in close collaboration with neurologists in order to ensure optimal usability. Due to the cloud-based architecture, both pay-per-use and subscription models can be offered. Moreover, a major part of the software will be open source and therefore attractive to clinical research.

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