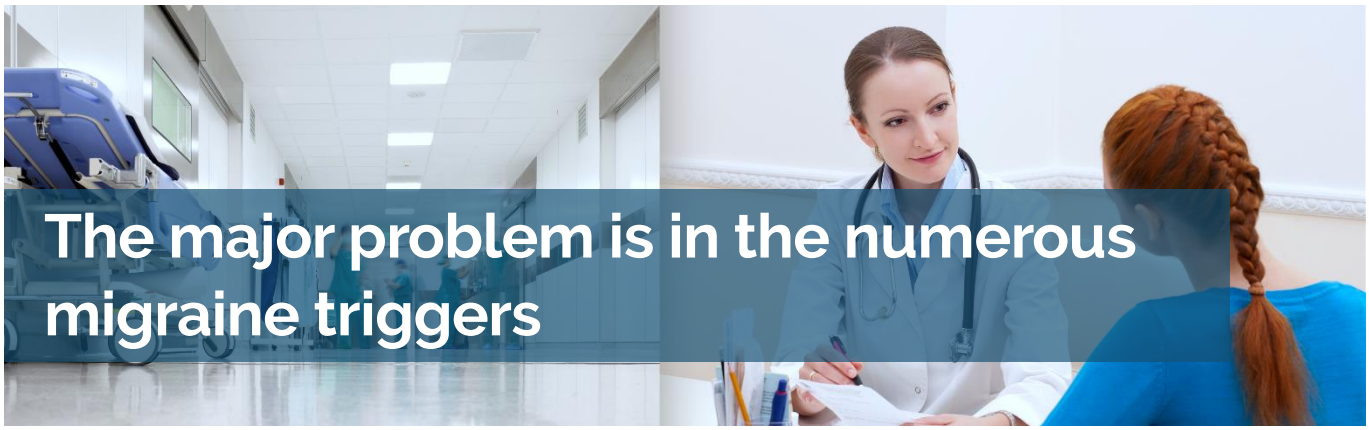
Migraine Prediction

DeepHealth

DeepHealth can support migraineurs foresee their upcoming migraine incident. Migraines are triggered by numerous factors and have diverse impact on each patient. The respective information is difficult to be manually combined and studied but DL algorithms can. Foreseeing a migraine incident can allow the patient to take actions according to his doctor guidance and offer the possibility to avoid or limit the impact a migraine attack may have on the patient's working and social life.



Challenge

Migraine is a neurological disorder expressed through intense headache attacks, affecting almost 15% of the world population, among the 8 most disabling diseases based on World Health Organization (WHO), but still not adequately treated. This is highly related to the 7 categories of migraine triggers that may apply in different combinations in the same person. Moreover, they are usually underestimated, and thus 50% of people who suffer from migraines prefer self-treatment (e.g., over-the-counter medication) than visit a doctor, without having the necessary experience or tools to handle the diversity of the triggering factors and their combinations, to predict the next migraine attack and thus, apply personalized treatment.

Solution

MigraineNet provides the patients with the ability to easily and instantly record migraine incidents through simple user-friendly questionnaires. It exploits the power of the European Distributed Deep Learning Library (EDDLL) and other Artificial Intelligence (AI) mechanisms for addressing the diversity of the triggering factors and allow the prediction of the next migraine incident of an individual, based on previous incidents, overall medical history, etc. To this end, it exploits user data related to the patient profile (e.g., sex, age, related medical, environmental and working conditions), b) past migraine incidents and c) daily habits. Latest pilot results with real patients prove that the consulting android/iOS MigraineNet application predicts migraine incidents with accuracy up to 73%, making the application a useful tool for self-managing the disease.

Benefits

Migraine prediction may a) help migraineurs schedule their activities based on their foreseen condition (limiting the need for re-scheduling during or after the migraine) or b) allow them to avoid the next incident (or at least limit its intensity) by avoiding the triggering factors and receiving their medication on time. According to the doctors, the sooner you receive migraine medication, the better its effectiveness. Finally, the application allows the extraction and provision of disease-related data to the carers for supporting the design of the patient-specific treatment.

Medical specialty:
Neurology

Use Case:
Migraines

Site:
Athens (Greece)

Entity:
WINGS ICT SOLUTIONS

DeepHealth Project

DeepHealth is a H2020 collaborative project which develops new HPC and Deep Learning techniques applied to large and complex biomedical datasets to support new and more efficient ways of diagnosis of diseases. The technologies developed (EDDLL, ECVL, etc.) have been validated by clinicians on 14 Use Cases like this, providing 14 Success Stories ready to scale to other healthcare institutions.

The MigraineNet mobile application. Learn more here.

DEEPHEALTH

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https://deephealth-project.eu/