



Big data advancing the way Parkinson's disease is detected

www.i-prognosis.eu

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This year again, the i-PROGNOSIS project takes part in the Parkinson's Awareness Month to raise awareness on the possibilities brought by new technologies to earlier detect the disease. Released last year in Germany, Greece, Portugal and the UK, the iPrognosis mobile application (available for free on the Google Play Store) allows for large-scale data collection (Gdata study) fostering the development of machine learning algorithms able to detect behavioural changes relating to Parkinson's disease (PD). A year later, the i-PROGNOSIS partners are starting the medical evaluation of the first version of these algorithms to hopefully provide preliminary evidence of the i-PROGNOSIS proof of concept.

The i-PROGNOSIS research and innovation project is building on the legacy of breakthrough research in artificial intelligence by leveraging the latest methodologies available in the field of data analysis. Since the release in April 2017, 749 Europeans downloaded the iPrognosis mobile application and provided consent to participate in the GData collection study. This research study, approved by ethical committees in all countries where the app is available, aims at collecting user-mobile interaction data and extracting behavioural features indicative of Parkinson's to train machine learning algorithms to identify symptoms related to the disease.

Both healthy older adults and people living with different stages of PD, over 40 years of age, can participate in the study. Depending on the services enabled by the user, different types of data can be captured:

- voice data when the user is talking on the phone,
- timing and pressure data when the user types using the iPrognosis keyboard,
- location data periodically through the day,
- facial expression data from front-facing camera photos,
- affective content data of stored text message.

So far, 433,625 records – for an equivalent of about 90 GB of large scale sensorial data – were collected unobtrusively. The unobtrusive character of data collection is core to the iPrognosis functionality.

All data and information obtained through the iPrognosis mobile application are stored securely on the Microsoft Azure Cloud, while app users still own and control their data. The iPrognosis mobile

application is compliant with the latest EU regulation in terms of data protection¹. After having provided informed e-consent, all participants of the GData study can withdraw their consent at any time via the settings menu of the app and data stored on the cloud can be seen and exported on request, by the user, and even deleted.

The first evaluation of the iPrognosis mobile app yielded promising findings with satisfactory results arising from both the technical and user acceptance evaluations. The purpose of the app was considered as useful by participants in the study who declared the app easy to set up and use. Yet participants' responses in some countries highlighted the importance to keep informing about privacy protection and to raise awareness of healthcare professionals to ensure their inclusion in these novel processes for early PD detection.

The coming year will be dedicated to the analysis of datasets collected through the app. Data collection will intensify with the release of the application in new countries and the development of an iOS version. A new research study called "SData study" will further lead to the clinical evaluation of the iPrognosis app potential to detect early PD symptoms and extend data collection by including new data sources.

- Regarding the former (the evaluation), medical experts of the i-PROGNOSIS Consortium will clinically assess a subset of iPrognosis users - both people living with PD and healthy individuals - based on standard medical practices to provide ground truth for the machine learning algorithms, in order to evaluate their performance regarding PD detection.
- Regarding the latter (the data collection extension), smartwatch devices will be given to a subset of users - again both people living with PD and healthy individuals - to provide additional data regarding hand tremor, sleep, movements linked to food intake and their relationship with PD.

WHAT IS i-PROGNOSIS?

Combining modern technology with medical experience, i-PROGNOSIS seeks to promote the prognosis of Parkinson's disease through advanced analysis of behavioural data captured during user interaction with everyday smart devices (smartphones, smartwatches, wristbands...).

At the same time, the project aims at the disease management via the design and implementation of targeted, innovative interventions, therefore forming new health practices based on technology. The expected results include the empowerment of people with Parkinson's, the improvement of their quality of life as the disease progresses, and the reduction of hospitalization.

i-PROGNOSIS is an ambitious, truly innovative research project with a clear social orientation that extends the synergies between the health sector and modern technologies. It stands as a proof that research and innovation are catalysts for significant developments to improve living standards.

¹ EU General Data Protection Regulation (GDPR) - www.eugdpr.org

NEXT i-PROGNOSIS CONTRIBUTIONS TO PUBLIC EVENTS

- [Measuring Behaviour \(Manchester, UK, 6-8 June 2018\)](#)
- [European Academy of Neurology \(Lisbon, Portugal, 16-19 June 2018\)](#)
- [International Conference on Technology and Innovation in Sports, Health and Wellbeing \(Thessaloniki, Greece, 20-22 June 2018\)](#)

MORE INFORMATION

Visit the GData study page: http://www.i-prognosis.eu/?page_id=1772

Download the iPrognosis mobile app: <http://bit.ly/iPrognosis>

Watch videos on our YouTube channel: http://bit.ly/iPrognosis_YouTube

Download our press kit: http://www.i-prognosis.eu/?page_id=48

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