Using smartphones to map Parkinson's and other degenerative diseases

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Smartphones will soon be able to perform the functions of a 'pocket doctor' and map Parkinson's disease and other degenerative diseases, thanks to the work of an Aston University mathematician and others.

With smartphones now able to accurately record movement, activity, location and voice, extensive research is being conducted into their potential as a medical diagnostic tool.

Dr Max Little, of Aston's Nonlinearity and Complexity Research Group, is utilising the latest advances in mobile technology to obtain information about how symptoms of Parkinson's change in people on an hourly basis. Rare genetic conditions, such as Friedrich's Ataxia, which causes muscle weakness as well as loss of speech and hearing, are also being analysed.

In one study, people with Parkinson's were asked to wear smartphones from which Dr Little and his team can collect data on how they move, how often they speak to others and how their voices alter over time. As information is recorded every 20 micro seconds, the amount of data gathered is vast.

Dr Little said: "This new kind of remote data analysis will help patients to monitor their conditions on a minute-by-minute basis from the comfort of their own homes. Of course, it is still important that they receive regular advice and treatment from medical professionals, who may also benefit from this new technology. Physicians may be able to

use data collected by their patients' smartphones to prescribe medications to help control the progress of neurodegenerative conditions.

"This information may also help examine people thought susceptible to developing Parkinson's disease. The condition is hard to diagnose, with specialists having to take a detailed history of peoples' symptoms and analysing them for physical signs of the disease. Using [smartphone](link) data may help to make this process much easier."

The research builds upon Dr Little's previous studies into Parkinson's disease which detected differences in voice patterns between people with and without the condition. In a small, lab-based study, accuracy of detection of the disease was nearly 99%.

The team are currently translating this technology and other collected data into a mobile format to provide daily analysis and feedback for individuals.

  More information: The Festival is taking place from 6-11 September in Birmingham and provides an opportunity to meet researchers face-to-face and discusses the latest developments in science, technology and engineering.

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