

PD-DAT: A Mobile Application for Parkinson's disease Early Detection and Therapy

Angelica Evangelista, Bryan Hipolito, Ehdrian Arellano, Nickson Lumban, Maricel M. Gaspar & Raymund Baesa
FAITH Colleges, Tanauan City Batangas, Philippines

ABSTRACT

Parkinson's disease (PD) is a brain condition that primarily affects the dopaminergic neurons in the substantia nigra. The symptoms of Parkinson's disease are generally developed slowly over years. Some cases have experienced significant symptoms at a very young age. PD symptoms may vary from person to person due to the diversity of the disease. Thus, there are no exact or particular symptoms of PD. The most common symptoms are tremor, bradykinesia, limb rigidity, gait, and balance problems. However, PD in general, has no standard cure, and treatment is based on the diagnosis symptoms of the patient. The doctors diagnose potential patients based on their medical history and problems and will run some tests to assess and determine if the patient has PD. Medications and treatment cost of Parkinson's disease is expensive. As mentioned above, the cause still remains unknown and cure has not been discovered yet, but treatment options are available which includes medications and surgery. In addition, Parkinson's itself is not fatal, even so, its progressive and evolving symptoms is what makes the disease threatening. This study would fill the gaps in building an app that contains a variety of tests which generally aims to predict early signs of PD and to provide therapy with the help of Neurologist and Occupational Therapist for the instrument and test validation. Unified Parkinson's disease Rating Scale (UPDRS) was utilized by the researchers in the assessment module of the application which is the standard instrument in assessing Parkinson's disease. There are 50 evaluators involved in testing the application. 26% of the evaluators are mostly teenagers ages 18-25 followed by ages 41-50 with 22%. Out of those 50 testers, the app provides four wrong diagnoses. With an 88% prototype accuracy rate, PD-DAT was able to diagnose early symptoms of PD and provides different therapies using mobile application which makes it more efficient and accessible to almost all individual.

Keywords: Mobile Application; Parkinson's disease; experts, therapy, early detection therapy

About the presenter:

Dr. Maricel M. Gaspar is currently serving as the BSIT Program Chair at FAITH Colleges in Tanauan City, Batangas, IT project manager, certified Microsoft Professional, former PSITE Region 4A Provincial Coordinator-Batangas (2019–2020), PSITE 4A Assistant Treasurer (2020–2021) and PSITE 4A Assistant Secretary (2021-2022). She presented several local and international research projects with the best paper awards during the IIER 2017 at Jeju Island in South Korea, and NCR PSITE International Research Competitions held in Makati, Philippines, in 2019. Data mining, image analysis, natural language processing, big data, information theory, systems analysis, agile software development, project management, cybersecurity, and the internet of everything are some of her research areas.

