

The Neuropsychology Assessment for Identifying Dementia in Parkinson's Disease Patients using a Deep Neural Network

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ABSTRACT

Parkinson's Disease (PD) patients have a high risk of developing dementia at least a year after the diagnosis. PD-Dementia affects both the physical and mental function that can gradually worsen the condition of the patients over time. This work proposed a framework for detecting dementia among PD patients based on neuropsychological assessment. This work classifies samples using the Montreal Cognitive Assessment (MoCA) scores as a guideline. It is classified into three categories, which are No Dementia, PD-MCI, and PD-Dementia. The work continues with designing a Deep Neural Network (DNN) architecture specific for analyzing electronic health records for PDDementia detection. Then, it compares the proposed model with the other five baseline methods. The experiment results present that the proposed DNN presents the highest result of 97.5%. This result shows that this proposed model is able to identify early dementia in PD patients from non-motor symptoms.

KEYWORDS

Dementia; Parkinson's disease; Multivariate data; Montreal cognitive assessment; Machine learning; Deep learning

ACKNOWLEDGEMENT

This work is partially supported by UMP-IIUM-UiTM Sustainable Research Collaboration 2020 (Grant No. RDU 200754).