

Prediction of patients with Parkinson's Disease based on artificial intelligence with gait video: feature extraction by skeletonizing algorithm

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Parkinson's disease(PD) is one of the neurodegenerative diseases, and symptoms gradually develop along with the death of dopaminergic cells. About 10 million patients are reported worldwide, social burden is increasing due to the increase in life expectancy and the increase in disease duration. In this study, we propose a method of using patients' gait videos as an auxiliary tool for early diagnosis of Parkinson's disease.

Human skeleton 15 points-joint coordinates are extracted by preprocessing the patients's gait videos using the skeleton algorithm of the Opencv library. From the extracted coordinates, features are extracted for machine learning and improving classification performance. Machine learning is conducted using time series-based deep learning model, and includes a workflow for selecting the optimal feature using RFE(Recursive Feature Elimination).

The purpose of this study is to conduct an early diagnosis of PD based on gait data videos; securing usefulness as a diagnostic aid by setting an auc score of 0.8 or higher as a target level

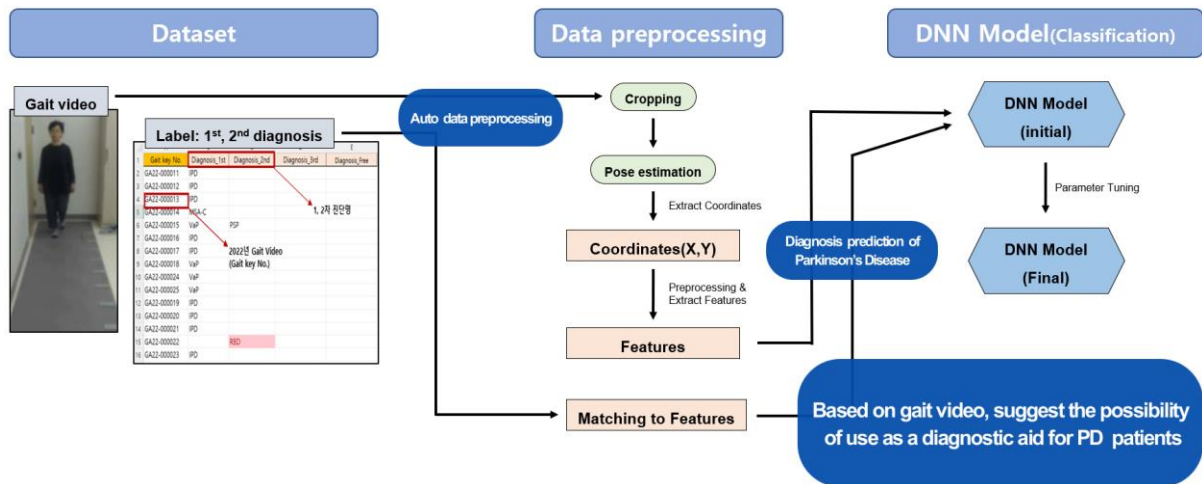


Figure 1. Overview of prediction of patients with Parkinson's Disease with gait Video

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References

[1] Rana Zia Ur Rehman et al., "Selecting Clinically Relevant Gait Characteristics for Classification of Early Parkinson's Disease: A Comprehensive Machine Learning Approach", scientific reports, 9, 17269 (2019)