MACHINE LEARNING CONDUCTED ON PHYSIOTHERAPIST DATA SET

Caleb Teo

April 30, 2020

1 Abstract

Machine Learning applications have a huge impact on various medical areas for diagnosis and treatment with great success. Machine Learning algorithms are used to aid physicians in the medical care of patients. The aim of this work is to investigate the Machine Learning algorithms that can predict the outcome of a physiotherapy patient's treatment. In this research work, a physiotherapist data set from a physiotherapist clinic was used to train Machine Learning algorithms in predicting the outcome of patients. Data processing techniques were applied to clean and prepare the data for the algorithms. The processed data was then used to train the Machine Learning algorithms. The findings were a successful implementation using Random Forest algorithm obtaining a high accuracy score in predicting patient's treatment outcome. The final approach included key mechanisms of SMOTETOMEK; a combined undersampling and oversampling technique, followed by Target encoding; encoding using Empirical Bayesian of a target. The work includes a thorough investigation of approaches using other data processing techniques and Machine Learning models such as Decision Trees, K-Nearest Neighbours, and Neural Networks. Several recommendations were given to further improve the results of the implementation. Recommendations were also given to the physiotherapist, which are the continuation of gathering data, standardising entry of data, and investigation of correlated features.