

PROJECT PROPOSAL

Curricular Unit: Advanced Automation

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General description: In this project it is intended to develop a model to obtain a diagnosis for Parkinson's disease using vocal features extracted from laboratory recordings of individuals with and without Parkinson's disease. The gathering of the dataset was done by Max Little of the Oxford University. The dataset that we pretend to use is a subset of 197 instances of the original dataset.

The features present in this dataset are:

Name - ASCII subject name and recording number
MDVP:Fo(Hz) - Average vocal fundamental frequency
MDVP:Fhi(Hz) - Maximum vocal fundamental frequency
MDVP:Flo(Hz) - Minimum vocal fundamental frequency
MDVP:Jitter(%),MDVP:Jitter(Abs),MDVP:RAP,MDVP:PPQ,Jitter:DDP - Several measures of variation in fundamental frequency
MDVP:Shimmer,MDVP:Shimmer(dB),Shimmer:APQ3,Shimmer:APQ5,MDVP:APQ,Shimmer:DDA - Several measures of variation in amplitude
NHR,HNR - Two measures of ratio of noise to tonal components in the voice
status - Health status of the subject (one) - Parkinson's, (zero) - healthy
RPDE,D2 - Two nonlinear dynamical complexity measures
DFA - Signal fractal scaling exponent
spread1,spread2,PPE - Three nonlinear measures of fundamental frequency variation

Objectives: Build predictive model to obtain a Parkinson's diagnosis

Methods: Use logistic regression, neural networks, KNN (and/or others)

Useful URLs:

Dataset:

<https://archive.ics.uci.edu/ml/datasets/Parkinsons>

Author Paper:

<https://www.scitepress.org/Papers/2021/103830/103830.pdf>

Author interview:

<https://edition.cnn.com/2012/11/27/tech/max-little-detecting-parkinsons-by-the-sound-of-a-voice/index.html>