**Neurological Disease Probability Prediction Using Voice Characteristics**

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Nearly 1 billion people in the world suffer from some neurological disorder. Majority of people suffer from Alzheimer's Disease or Parkinson’s Disease. These neurological diseases are basically an anomaly of the central nervous system. The difficulty in the diagnosis is that every patient has their own set of symptoms. But the most common symptom among them all is variation in their voice. So, data extracted from the voice samples of these patients can be used to predict the probability of them having a neurological disease using a neural network.

This project aims to construct such a model to employ vocal characteristics to classify and predict the probability of a person having a neurological disease.

**References:**

[1] Laureano Moro-Velazquez, Jorge A. Gomez-Garcia, Julian D. Arias-Londoño, Najim Dehak, Juan I. Godino-Llorente, “Advances in Parkinson's Disease detection and assessment using voice and speech: A review of the articulatory and phonatory aspects”, 2021, ISSN 1746-8094, <https://doi.org/10.1016/j.bspc.2021.102418>.

[2] Amir Hossein Poorjam, Mathew Shaji Kavalekalam, Liming Shi, Yordan P. Raykov, Jesper Rindom Jensen, Max A. Little, Mads Græsbøll Christensen, “Automatic quality control and enhancement for voice-based remote Parkinson’s disease detection”, 2019, arxiv, <https://doi.org/10.48550/arXiv.1905.11785>

[3] Amrit Romana, John Bandon, Matthew Perez, Stephanie Gutierrez, Richard Richter, Angela Roberts, Emily Mower Provost, “Automatically Detecting Errors and Disfluencies in Read Speech to Predict Cognitive Impairment in People with Parkinson’s Disease”, 2021, ISCA, <https://doi.org/10.21437/Interspeech.2021-1694>

[4] O. Karaman, H. Çakın, A. Alhudhaif, K. Polat, “Robust automated Parkinson disease detection based on voice signals with transfer learning”, Expert Syst. Appl. 178 (2021), 115013, <https://doi.org/10.1016/j.eswa.2021.115013>

[5] N. P. Narendra, B. Schuller and P. Alku, “The Detection of Parkinson's Disease From Speech Using Voice Source Information”, in *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 29, pp. 1925-1936, 2021, <https://doi.org/10.1109/TASLP.2021.3078364>