**Project Design Phase-I**

**Proposed Solution Template**

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| Date | 2 October 2022 |
| Team ID | PNT2022TMID52927 |
| Project Name | Detection of Parkinson’s Disease Using Machine Learning |
| Maximum Marks | 2 Marks |

**Proposed Solution Template:**

Project team shall fill the following information in proposed solution template.

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| **S.No.** | **Parameter** | **Description** |
|  | Problem Statement (Problem to be solved) | Since there is no conclusive test to detect PD, clinical criteria must be used to make the diagnosis. This limits the ability of the general public to identify sickness. It would be preferable if there were a method that made it possible for regular people to forecast the disease. |
|  | Idea / Solution description | There is no cure for Parkinson's disease at the moment, but treatments are available to help relieve symptoms and maintain your quality of life. These therapies include supportive therapies like physiotherapy, medication, and surgery (for some people). Because symptoms are usually mild in the early stages of Parkinson's disease, they may not require any treatment. |
|  | Novelty / Uniqueness | A doctor may recommend a dopamine transporter (DAT) scan, which is a specific single-photon emission computerised tomography (SPECT) scan. Although this can lend credence to the suspicion that the victim has Parkinson's disease, the symptoms and neurological examination are ultimately what determine the correct diagnosis. To make things easier for ordinary people, the dataset in this project includes spiral and wave images drawn by them. They are used to train and test the model for Parkinson's disease detection. This is the project's distinguishing feature. |
|  | Social Impact / Customer Satisfaction | Social symptoms of Parkinson's disease can have severe negative social consequences, such as stigma, dehumanisation, and loneliness, and may have an even greater impact on quality of life than more well-known motor or cognitive symptoms. People with Parkinson's disease are less likely to have many close friends. Some people hide their identities from others, which disrupts social connections. |
|  | Business Model (Revenue Model) | Parkinson's disease (PD) is the world's second most common and complicated neurodegenerative disorder. The Unified Parkinson's Disease Rating Scale, or UPDRS, is primarily used to track the progression and severity of Parkinson's disease symptoms. The UPDRS is regarded as the most reliable and widely used clinical rating scale for Parkinson's disease patients. In this project, we use machine learning (ML) approaches to detect Parkinson disease that have demonstrated the ability to handle large volumes of medical datasets and presented perceptual directions. By manipulating big data from patients' records, ML-based tools could improve individual safety, improve medical care quality, reduce medical care costs, and support physicians' efforts. ML approaches can be used to create effective CDSS (Clinical decision support system) to assist medical specialists in making accurate and timely predictions. CDSSs designed with machine learning approaches have played an important role in determining the presence or severity of the disease. |
|  | Scalability of the Solution | The medical observations and assessment of clinical signs, including the characterization of a variety of motor symptoms, are commonly used to diagnose Parkinson's disease (PD). Traditional diagnostic approaches, on the other hand, may suffer from subjectivity because they rely on the evaluation of movements that are sometimes subtle to human eyes and thus difficult to classify, potentially leading to misclassification. Meanwhile, early non-motor symptoms of Parkinson's disease may be mild and caused by a variety of other conditions. As a result, these symptoms are frequently overlooked, making early PD diagnosis difficult.  To address these challenges and improve PD diagnosis and assessment procedures, machine learning methods for the classification of PD and healthy controls or patients with similar clinical presentations were implemented in this project (movement disorders or other Parkinsonian syndromes). |