Project Design Phase-I Proposed Solution

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| Date | 15 October 2022 |
| Team ID | PNT2022TMIDxxxxxx |
| Project Name | Project - Detecting 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** |
| 1. | Problem Statement (Problem to be  solved) | Parkinson's disease (PD) is a neurological movement disorder in which symptoms steadily worsen over time, beginning with a mild tremor in one hand and a sensation of stiffness throughout the body. Over 6 million individuals are affected worldwide. There is currently no convincing finding for this condition by non-specialist practitioners, particularly in the early stages of the disease where identifying symptoms is challenging. |
| 2. | Idea / Solution description | One of the indications of Parkinson’s is tremors and rigidity in the muscles, making it difficult to draw smooth spirals and waves. It is possible to detect Parkinson’s disease using the drawings alone instead of measuring the speed and pressure of the pen on paper. Our goal is to quantify the visual appearance(using HOG method) of these drawings and then train a machine learning model to classify them. In this project, We are using, Histogram of Oriented Gradients (HOG) image descriptor along with a Random Forest classifier to automatically detect Parkinson’s disease in hand-drawn images of spirals and waves. |
| 3. | Novelty / Uniqueness | The problem can be solved with a low error rate by utilising machine learning techniques.  In addition, by merging spiral drawing inputs from normal and Parkinson's patients, our suggested approach produces accurate findings.  We offer a hybrid and precise method for assessing patient spiral drawing data. Thus, by integrating both data, the doctor may determine normalcy or abnormalcy and provide medication based on the afflicted stage. |
| 4. | Social Impact / Customer Satisfaction | Used to detect Dementia at early stage.  Used to detect neurodegenerative disorders.  Used for clinical diagnosis for patients above 50 years |
| 5. | Business Model (Revenue Model) | This architecture can be provided as a service to many hospitals for rapid diagnosis also this can be provided as a personal subscription for patients |
| 6. | Scalability of the Solution | In this method we can predict the parkinsons disease in patient’s body using machine learning technology and this method makes the process easy to our user. And it provides more precise and accurate results. |