**Project Design Phase-I**

**Proposed Solution Template**

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| Date | 19 September 2022 |
| Team ID | PNT2022TMIDxxxxxx |
| Project Name | Project - xxx |
| 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) | The objective is to use Cardiotocograms (CTGs) as a cost-effective and accessible tool in healthcare to help in early detection of potential risks to reduce child and maternal mortality. he goal is to create a robust multi-class classification system capable of accurately categorizing fetal health into 'Normal,' 'Pathological,' or 'Suspect' classes using features such as fetal heart rate, movements, and uterine contractions. |
| 2. | Idea / Solution description | The proposed solution involves utilizing Random Forests to build a predictive model for fetal health classification based on a dataset comprising various features associated with fetal well-being. By leveraging Cardiotocograms (CTGs) as the primary data source, this model aims to accurately classify fetal health into 'Normal,' 'Pathological,' or 'Suspect' categories. It involves preprocessing the dataset, feature selection, and training a Random Forest algorithm to predict fetal health based on characteristics like fetal heart rate, movements, and uterine contractions. |
| 3. | Novelty / Uniqueness | Utilizing Random Forests specifically for fetal health classification based on CTG data is a unique approach in the realm of healthcare.  Integrating multiple features from CTGs into a single predictive model to categorize fetal health status distinguishes this solution from traditional approaches. |
| 4. | Social Impact / Customer Satisfaction | Reducing Mortality: Early detection of fetal health issues can lead to timely interventions, significantly reducing child and maternal mortality rates.  Accessible Healthcare: By leveraging CTGs, a cost-effective and widely available tool, the solution aims to make quality prenatal care more accessible, particularly in low-resource settings. |
| 5. | Business Model (Revenue Model) | 1. Partnerships with Healthcare Institutions: Collaboration with hospitals, clinics, and healthcare centers to implement the predictive model as part of their prenatal care services. 2. Consultation and Training: Providing consultation and training services to healthcare professionals on using the predictive model effectively. |
| 6. | Scalability of the Solution | Random Forests are known for their scalability; the model can handle large datasets and diverse features, making it adaptable to various healthcare settings and different populations  With continuous updates and refinements based on new data and research, the model can evolve and improve its accuracy over time. |