Project Design Phase-I
Proposed Solution Template

Date	22 October 2022
Team ID	PNT2022TMID48683
Project Name	Early Detection of Chronic Kidney Disease using Machine Learning
Maximum Marks	2 Marks

Proposed Solution Template:

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

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Chronic kidney disease (CKD) is a significant healthcare burden that affects billions of individuals worldwide1,2 and makes a profound impact on global morbidity and mortality. Gradual loss of the kidney function can lead to end stage kidney disease (ESKD) in CKD patients, precipitating the need for kidney replacement therapy (KRT). Timely intervention in those CKD patients who have a high risk of ESKD may not only improve these patients' quality of life by delaying the disease progression, but also reduce the morbidity, mortality and healthcare costs resulting from KRT8,9. Because the disease progression is typically silent10, a reliable prediction model for risk of ESKD at the early stage of CKD can be clinically essential
2.	Idea / Solution description	Model is expected to facilitate physicians in making personalized treatment decisions for high-risk patients, thereby improving the overall prognosis and reducing the economic burden of this disease. A few statistical models were developed to predict the likelihood of ESKD based on certain variables, including age, gender, lab results, and most commonly, the estimated glomerular filtration rate (eGFR) and albuminuria. An ML models for predicting the risk of ESKD on a Chinese CKD dataset. The ML models were trained and tested based on easily obtainable variables, including the baseline characteristics and routine blood tests. Results obtained from this study suggest not only the feasibility of ML models in performing this clinically critical task, but also the potential in facilitating personalized medicine
3.	Novelty / Uniqueness	The proposed work deals with classification of different stages of CKD according to its gravity .The random forest algorithm outperformed all

		other applied algorithms, reaching an accuracy, precision, recall, and F1-score of 100% for all measures. CKD is a serious life-threatening disease, with high rates of morbidity and mortality
4.	Social Impact / Customer Satisfaction	Psychosocial factors including depression, anxiety and lower social support are common in patients with chronic kidney disease (CKD). However the influence of these potentially modifiable risk factors on morbidity
5.	Business Model (Revenue Model)	Suggesting the model to pharmacies to make the population growth of models to rise and make the revenue for calculating the disease prediction using this models. Make a web application to make prediction of disease and set the application to cost metrics. If the model have enough accuracy it can be promoted to hospital usage thus making the product subscription method for hospitals
6.	Scalability of the Solution	Make the models spread over globe to increase the model population. Suggesting to medical pharmacist, doctors to use the model web application make a high revenue further make it a standard method for prediction of kidney chronic disease. Making the model with future technologies create them more valuable in all dimensions