

**Project Design Phase-I**  
**Proposed Solution Template**

Date	10 October 2022
Team ID	PNT2022TMIDxxxxxx
Project Name	Early Detection of Chronic Kidney Disease using Machine Learning
Maximum Marks	2 Marks

**Proposed Solution Template:**

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	<ol style="list-style-type: none"><li>1. Noncommunicable illnesses are the leading cause of early death, and CKD is the leading noncommunicable disease. Chronic Kidney Disease is a major concern for the global health care system. People with CKD must focus on implementing proven, cost-effective therapies to as many people as possible while taking into consideration restricted needs, human and financial resources.</li><li>2. Chronic kidney disease (CKD) is now wreaking havoc on society and is spreading at an alarming rate. Various efforts have been undertaken to advance early therapy to prevent the condition from progressing to chronic disease. Recent research suggests that some of the negative outcomes can be avoided with early identification and treatment.</li></ol>
2.	Idea / Solution description	<p>To predict chronic kidney disease, this study employs Decision Tree Classifiers, Random Forest Classifiers, Support Vector Machines, and Artificial Neural Networks. Among these algorithms, we attempt to construct our prediction model, and we choose the best performance by assessing their accuracy.</p> <p>Support Vector Machine (SVM)</p> <p>This is the most well-known and useful supervised machine-learning method, which works on classification and regression issues but is most used for classification. To segregate labelled data, SVM employed a kernel function. One of the benefits of employing kernels in SVM is that SVM applies kernel dentitions to</p>

		non-vector inputs, and kernels may be built using a variety of data types.
3.	Novelty / Uniqueness	<ul style="list-style-type: none"> <li>SVR boasted great prediction accuracy for two of the nine factors.</li> <li>By classifying the water according to their quality, the usage of water will be more efficient.</li> <li>Aquatic life preservation practical.</li> </ul>
4.	Social Impact / Customer Satisfaction	<ul style="list-style-type: none"> <li>The database of developments in the health sector is growing very rapidly. The data is very important to be processed and needs to be useful.</li> <li>Machine Learning and data mining are fields of research which can process databases into knowledge that can be used for diagnosing disease, such as Chronic Kidney Disease (CKD).</li> <li>This mining technique is used to predict CKD condition using two-fold regression algorithms namely Multivariate Linear Regression and Logistic Regression</li> </ul>
5.	Business Model (Revenue Model)	Early prediction and proper treatments can possibly stop, or slow the progression of this chronic disease to end-stage, where dialysis or kidney transplantation is the only way to save patient's life.
6.	Scalability of the Solution	<ul style="list-style-type: none"> <li>The server in which the app is deployed containing the ml model must be capable of handling concurrent request and handle multiple request</li> <li>maintaining the ml model by tweaking the parameter which doesn't play vital role in prediction by seeing the next set of dataset</li> <li>regular maintenance and changes in model with new features included in it</li> </ul>