

Ideation Phase

Brainstorm & Idea Prioritization


Date	15 October 2022
Team ID	PNT2022TMID39626
Project Name	Early Detection Of Chronic Kidney Disease Using Machine Learning.
Maximum Marks	4 Marks

Brainstorm & Idea Prioritization Template:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.




Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room

Step-1: Team Gathering, Collaboration and Select the Problem Statement




EARLY DETECTION OF CHRONIC KIDNEY DISEASE USING MACHINE LEARNING


Chronic kidney disease (CKD) is one of the most critical health problems due to its increasing prevalence. In this paper, we aim to test the ability of machine learning algorithms for the detecting of chronic kidney disease using the smallest subset of features. Several statistical tests have been done to remove redundant features such as the ANOVA test, the Patients correlation, and the Cramer's V test. Logistic regression, support vector machines, random forest, and gradient boosting algorithms have been trained and tested using 10-fold cross-validation. We achieve an accuracy of 99.1 according to F1-measure from Gradient Boosting classifier. Also, we found that hemoglobin has higher importance for both random forest and Gradient boosting in detecting CKD. Finally, our results are among the highest compared to previous studies but with less number of features reached so far. Hence, we can detect CKD at only \$26.65 by performing three simple tests.

 10 minutes to prepare
 1 hour to collaborate
 2-8 people recommended

[Share template feedback](#)

 **Before you collaborate**

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

 10 minutes

A Team gathering
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B Set the goal
Think about the problem you'll be focusing on solving in the brainstorming session.

C Learn how to use the facilitation tools
Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) →

1

Define your problem statement


The main aim is to detect the detection efficiency that would be beneficial for the patients who are suffering from chronic kidney disease and to prevent at early stages to reduced the effects of CKD.

Chronic Kidney Disease is a condition in which the kidneys are damaged and cannot filter blood as they always do. A family history of kidney diseases or failure, high blood pressure, type 2 diabetes may lead to CKD. This is a lasting damage to the kidney and chances of getting worse by time is high.

The very common complications that results due to a kidney failure are heart diseases, anemia, bone diseases, high potassium and calcium.


The worst case situation leads to complete kidney failure and necessitates kidney transplant to live. An early detection of Chronic Kidney Disease can improve the quality of life to a greater extent. This calls for good prediction algorithm to predict CKD at an earlier stage. the techniques used in the problems are KNN, Naive Bayes, Logistic Regression.

This uses data pre-processing, data transformation and various classifiers to detect Chronic Kidney Disease and also proposes best detection framework for Chronic Kidney Disease. The results of the framework show promising results of better detection at an early stage of Chronic Kidney Disease.







 5 minutes

PROBLEM

The detection efficiency that would be beneficial for the patients who suffering from chronic kidney disease and try to cure at early stages.



Key rules of brainstorming
To run an smooth and productive session

-  Stay in topic.
-  Encourage wild ideas.
-  Defer judgment.
-  Listen to others.
-  Go for volume.
-  If possible, be visual.

Step-2: Brainstorm, Idea Listing and Grouping.

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

20 minutes

Hemanth babu M

Medications should be correctly mentioned

Easy access to detect the chronic kidney disease

Thoufeeq F

It should detect all kind of kidney problems

It should be trusted

Saravanan A

Useful to people with no prior knowledge about it

blood pressure should below 140/90 for CKD patients

The system should communicate with patients in all aspects

patients should take urine test

It should be compatible with future technologies

patients should have controlled diet

Shanmugam E

It should show same as the doctors prescription

Patients should be in diet with the consult of doctors prescribed food chart

Lokesh S

Patients should stay in their target cholesterol range.

patients should take blood test

It should take less time for detecting CKD

Patients should do physical activity which helps to control blood sugar levels.

System should not be harm to patients at any cost

patients should take there medicine to cure

Mohamed Musharaff A

patients should stay in their target blood sugar range as much as possible.

It should make patients to follow the proper diet

It should reduce the pain of chronic kidney disease

patients should be cured

Category-1

It should be worthy to all patients

Medications should be correctly mentioned

System should be easily maintained

Category-2

It should take less time for detection

It should make patients to follow proper diet.

System detection should be accurate.

Patients should do physical activity which helps to control blood sugar levels

It should detect all kind of kidney problems

Category-3

It should take less time for detection.

System should not harm to patients at any cost.

Easy access to detected information

Patients should stay in their target cholesterol range

Step-3: Idea Prioritization

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes

Importance

Feasibility

Regardless of their importance, certain ideas are more feasible than others. © 2016, Wipro, All rights reserved.