

**GOVERNMENT COLLEGE OF ENGINEERING
(Formerly IRTT)
ERODE-638 316**



BONAFIDE CERTIFICATE

Certified that this project titled **“EARLY DETECTION OF CHRONIC KIDNEY DISEASE USING MACHINE LEARNING”** is the bonafide work of **“KAVIN KUMAR R (731119205014), MONISH V S (731119205024), POOVARASU T (731119205034), TIRUMAL T N (731119205045)”** who carried out the project work under my supervision.

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1.INTRODUCTION

1.1 Project Overview

Kidney Disease are the main reason for a huge number of death in the world over the last few decades and has emerged as the most lifethreatening disease, not only in India but in the whole world. So, there is a need of reliable, accurate and feasible system to diagnose such diseases in time for proper treatment. Machine Learning algorithms and techniques have been applied to various medical datasets to automate the analysis of large and complex data. Many researchers, in recent times, have been using several machine learning techniques to help the health care industry and the professionals in the diagnosis of Kidney related diseases.

1.2 Purpose

Chronic kidney disease (CKD) is a perennial condition where the kidneys deteriorate and stop functioning gradually. This disease has become one of the major public health concerns worldwide. It is insidious, often recognizable only by laboratory abnormalities until its latest stages. The main motive of this work is to ascertain the existence of chronic kidney disease by imposing various classification algorithms on the patient medical record. This research work is primarily concentrated on finding the best suitable classification algorithm which can be used for the diagnosis of CKD based on the classification report and performance factors.

2.LITERATURE SURVEY

2.1 Existing Problem

Chronic Kidney Disease prediction is one of the most important issues in healthcare analytics. The most interesting and challenging tasks in day-to-day life is prediction in medical field.

2.2 References

The efficiency of ML techniques depends on the selection and use of the appropriate features. Hence, this research analysis several feature optimization approaches along with a max voting ensemble model to establish a highly accurate CKD diagnosis system by using an appropriate feature set. The ensemble model of this research is structured with five existing classifiers. Three types of feature optimization namely feature importance, feature reduction, and feature selection where for each approach two most proficient techniques are analyzed with the mentioned ensemble model. The most outstanding result of 99.5% accuracy by using 10- fold cross-validation. Muhammad MinoarHossain et al.,

The examination of dataset by directed supervised machine learning technique (SMLT) to catch a few data resembles, variable recognizable proof, uni-variate investigation, bi-variate and multi-variate investigation, missing worth medicines and break down the information approval, information cleaning/getting ready, and information perception will be done on the whole given dataset. To classifying information from need, and the outcome shows that the adequacy of the proposed AI calculation method can be contrasted and best exactness with accuracy, callback Diddi Priyanka et at.,

They take a few attributes to measure our analysis about chronic kidney disease and this attribute is one of the major occurrences of chronic kidney disease. Therefore 8 machine learning classifier are used to measure analysis using weka tools namely: Logistic Regression (LG), Naive Bayes (NB), Multilayer Perceptron (MLP), Stochastic Gradient Descent (SGD), Adaptive Boosting (Adaboost), Bagging, Decision Tree (DT), Random Forest (RF) classifier are used. They feature extraction of all attributes using principal component analysis (PCA). We gain the highest accuracy from the Random Forest (RF) and it is 99 % and ROC (receiver operating characteristic) curve value is also highest from other algorithms.Minhaz Uddin et al.,

Saurabh Pal(2022) The purpose of the proposed study is to develop and validate a predictive model for the prediction of chronic kidney disease. Machine learning algorithms are often used in medicine to predict and classify diseases. Medical records are often skewed. They have used chronic kidney disease. Dataset from UCI Machine learning repository with 25 features and applied three machine learning classifiers Logistic Regression (LR), Decision Tree (DT), and Support Vector Machine (SVM) for analysis and then used bagging ensemble method to improve the results of the developed model. The clusters of the chronic kidney disease dataset were used to train the machine learning classifiers. the Kidney Disease Collection is summarized by category and non- linear features. We get the best result in the case of decision tree with accuracy of 95.92%. Finally, after applying the bagging ensemble method we get the highest accuracy of 97.23%.

The feature selection techniques, namely, Relief-F and chi-squared feature selection method, were applied to select the important features. Six machine learning classification algorithms were used in this research: decision tree (DT), logistic regression (LR), Naive Bayes (NB), Random Forest (RF), support vector machine (SVM), and Gradient-Boosted Trees (GBT

Classifier) as ensemble learning algorithms. Four methods of evaluation, namely, accuracy, precision, recall, and F1-measure, were applied to validate the results. Manal A Abdel-Fattah et al.,

2.3 Problem Statement Definition

Chronic kidney disease (CKD) means your kidneys are damaged and can't filter blood the way they should. The main risk factors for developing kidney disease are diabetes, high blood pressure, heart disease, and a family history of kidney failure.

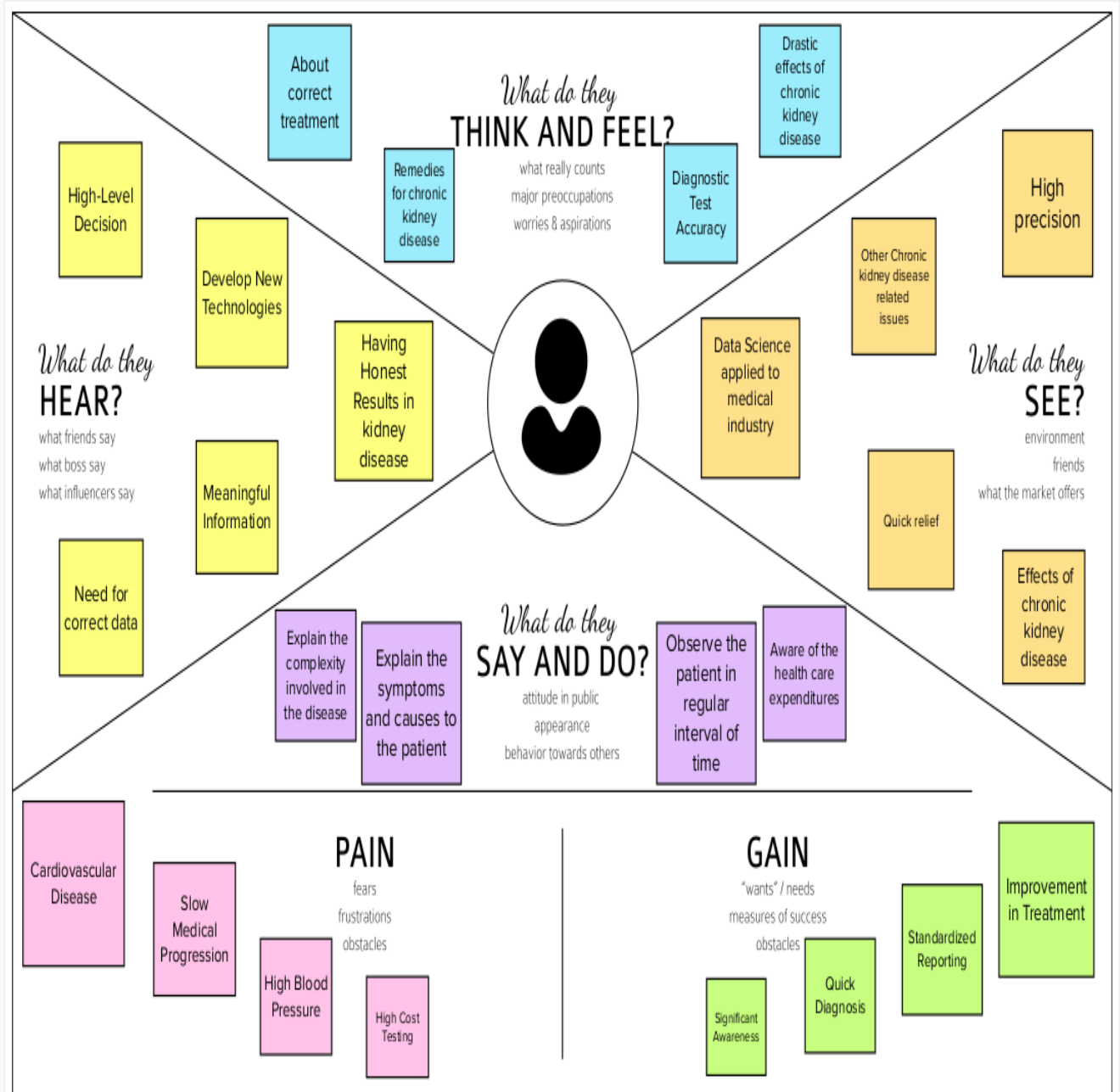
10% of the population worldwide is affected by chronic kidney disease (CKD), and millions die each year because they do not have access to affordable treatment.

People are at risk for kidney disease if people have diabetes, high blood pressure, heart disease, or a family history of kidney failure. If you have risk factors, get tested for kidney disease and protect your kidneys by making healthy food choices, being more active, aiming for a healthy weight, and managing health conditions that cause kidney damage.

Chronic kidney Disease can be cured, if treated in the early stages. The main aim of this project is to predict whether the patient have chronic kidney disease or not, in more accurate and faster way based on certain diagnostic measurements like Blood Pressure (Bp), Albumin(AI).

3.IDEATION & PROPOSED SOLUTION

3.1 EmpathyMap Canvas



3.2 Ideation & Brainstorming

2 Brainstorm

Write down any idea that comes to mind that address your problem statement.

10 minutes

You can select a sticky note and in the panel below it, add it to a cluster to group it.

POOVARASU

- collection of blood samples
- collecting urine from related test samples
- storing the collected samples on data sheets
- preparing the data sheets
- splitting the dataset based on the CVD
- data wrangling

TIRUMAL

- using various ML algorithms
- libraries include sickit learn
- models like XGBoost, KNN
- calculating accuracy and predicting scores
- Dataset updation if necessary
- Deploy the models

KAVIN

- Validating and evaluating the models
- Visualizing the data by plotting inputs
- Training the model to fit the parameters

MONISH

- Statistically graphing the data based on test samples
- Analyzing the result with all levels
- Analyzing the data for individual if needed

3 Group ideas

Take turns sharing your ideas with clustering similar or related notes as you go. In the last 10 minutes, give each cluster a sentence like label. If a cluster is bigger than six sticky notes, try and use it to break it up into smaller sub-groups.

10 minutes

Data collection and processing

- collecting other liver related test samples
- preparing the data sheets
- data wrangling
- Visualizing the data by plotting inputs

Datasets and model

- Dataset updation if necessary
- libraries include sickit learn
- models like XGBoost, KNN, etc
- Training the model to fit the parameters

Analyzing and Deployment

- calculating accuracy and predicting scores
- Analyzing the result with all levels
- Statistically graphing the data based on test samples
- Deploying the best model

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.

10 minutes

Importance
Each sticky note has a number of one and two, to make prioritizing easier.

Feasibility
Each sticky note has a number of one and two, to make prioritizing easier.

3.3 PROPOSED SOLUTION

S.NO	PARAMETER	DESCRIPTION
1.	Problem Statement (Problem to be solved)	<p>Chronic kidney disease (CKD) means your kidneys are damaged and can't filter blood the way they should. The main risk factors for developing kidney disease are diabetes, high blood pressure, heart disease, and a family history of kidney failure.</p> <p>To detect CKD Earlier using machine learning.</p>
2.	Idea / Solution description	By taking the past medical history of patients from the dataset as inputs to predict CKD using machine learning concepts.
3.	Novelty / Uniqueness	By analysing different predictions models of machine learning and finding the best of it based on its accuracy.
4.	Social Impact / Customer Satisfaction	Helps in early diagnosis Rapid Recovery Reduction in CKD testing cost
5.	Business model	Commissions for every new features added to the model. One time investment for hospitals
6	Scalability of the Solution	The ability of the model to grow to meet a company's business needs by adding new features.

3.4 PROBLEM SOLUTION FIT

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) <small>Who is your customer base? i.e. working parents of 0 to 5 y.o. kids</small> <p>CC</p> <ul style="list-style-type: none"> Patients who are affected by the kidney disease Doctors and clinical labs in the hospitals 	4. CUSTOMER CONSTRAINTS <small>What constraints prevent your customers from taking action on their problem? i.e. time, money, knowledge, access, technology, network, infrastructure, social, spending power, budget, no credit, network</small> <p>CC</p> <ul style="list-style-type: none"> To wait for long time for the results High cost for clinical test 	5. AVAILABLE SOLUTIONS <small>Which solutions are available for the customers when they face the problem? i.e. medical treatment path chosen? What have they tried in the past? What price do these solutions have? i.e. pain and paper is an alternative to digital marketing</small> <p>AS</p> <ul style="list-style-type: none"> Dialysis Kidney Transplant Treatment in the good hospital 	Explore AS, differentiate
	Focus on J&P, fit into BE, understand RC	2. JOBS-TO-BE-DONE / PROBLEMS <small>Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one, explore different sides.</small> <p>J&P</p> <ul style="list-style-type: none"> Collect all their requirements Developing a model that could predict the disease 	9. PROBLEM ROOT CAUSE <small>What is the real reason that this problem exists? What is the back story behind the need to do this job? i.e. customers have to do it because of the change in regulations.</small> <p>RC</p> <ul style="list-style-type: none"> Diabetes Heart disease obesity 	
Identify strong TR & EM		3. TRIGGER <small>What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.</small> <p>TR</p> <p>Symptoms of kidney disease include fatigue, cold, shortness of breath, swelling, dizziness</p> <hr/> 4. EMOTIONS BEFORE/AFTER <small>How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure, confident, in control - use it in your communication strategy & design</small> <p>EM</p> <p>People cannot afford so much money for testing But after this project testing cost will be lowered</p>	10. YOUR SOLUTION <small>If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.</small> <p>SL</p> <p>Generating a user application that gets the input and predicts the current condition of patient health</p>	8. CHANNELS of BEHAVIOUR 8.1 ONLINE <small>What kind of actions do customers take online? Extract online channels from #7</small> <p>Users can get their results online</p> <hr/> 8.2 OFFLINE <small>What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.</small> <p>With the results obtained from online, they can visit the doctor for proper treatment</p>

4.REQUIREMENT ANALYSIS

4.1 Functional Requirement

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration of their details like bp.	User should enter the valid datas and his/her original information to predict the result
FR-2	User Approval	Confirmation from user to get approve to process the customer data in model.
FR-3	External Interface	Flask elements with which a component used to interact and respond
FR-4	Personal Sharing	Allows customer to share information to doctor and personal consultant

4.2 Non-functional Requirements

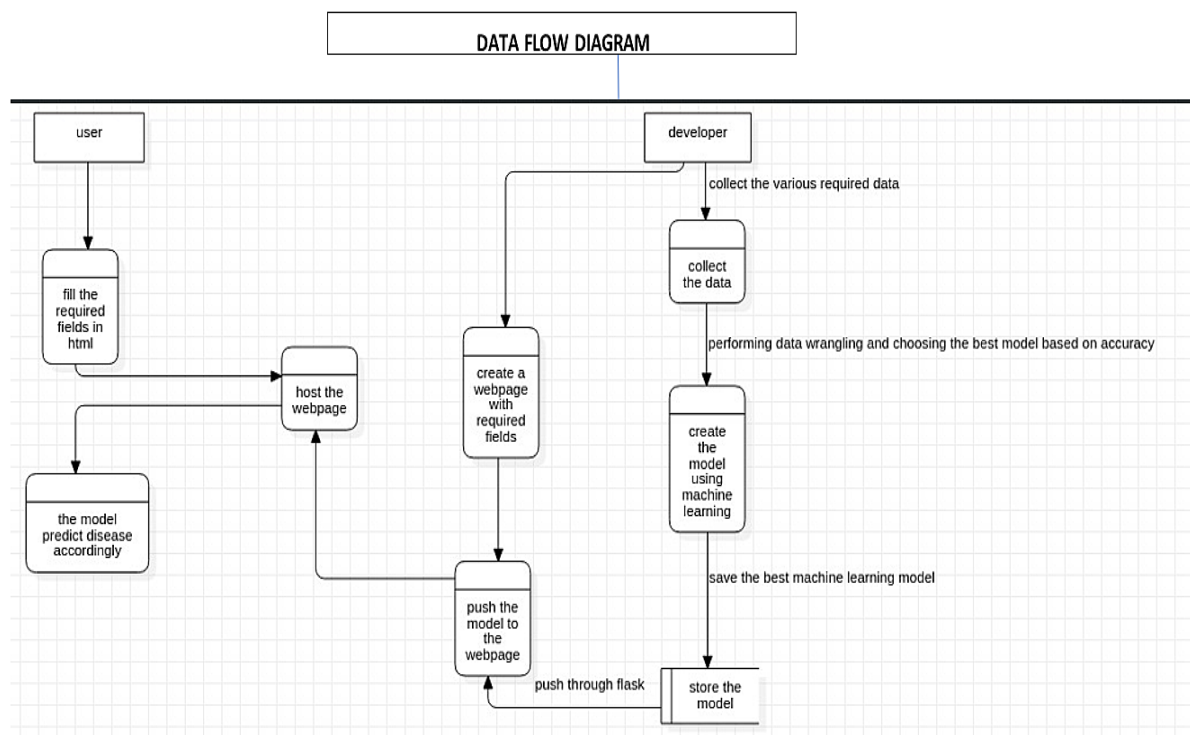
Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Provides a interface with are easy to use
NFR-2	Security	Protection against possible Difficulties and to avoid Threads
NFR-3	Reliability	Provides a consistent usage
NFR-4	Performance	Provides effective accomplishment to the tasks assingned
NFR-5	Availability	Provides accessibility and Flexibility in a period of time

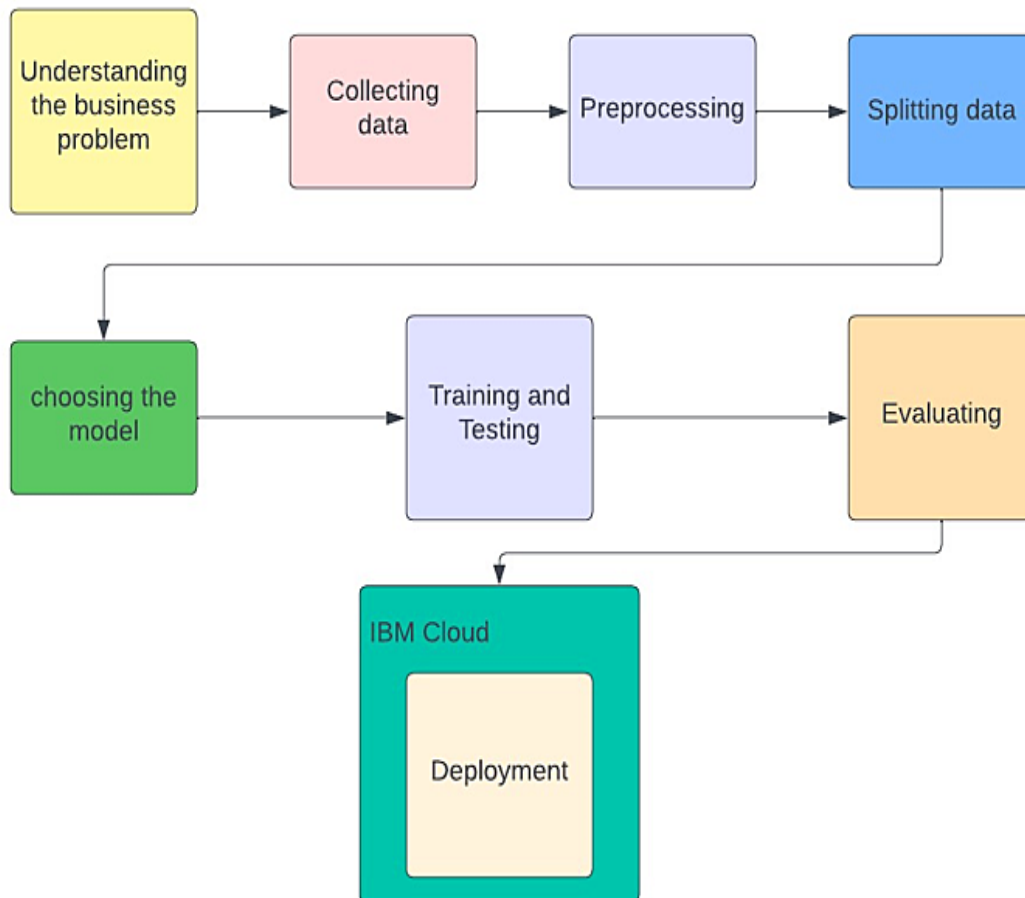
5.PROJECT DESIGN

5.1 Data Flow Diagram & User Stories

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



5.2 Solution and Technical Architecture



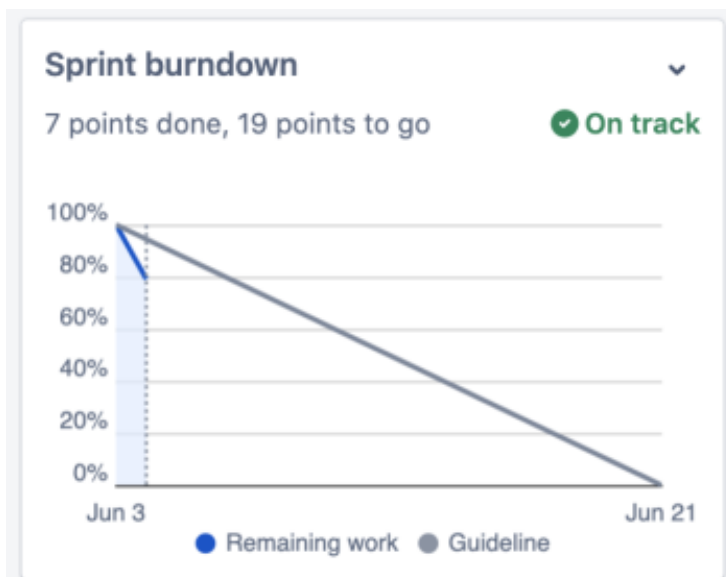
6.PROJECT PLANNING AND DESIGNING

6.1 Sprint Planning and Estimation

Sprint 1,2,3 and 4:

- As a user, I can enter the requirements like bp,wbc,rbc,count,etc. As a user, I will agree to process these information in model which is in cloud.
- As a developer i must create the machine learning model in ibm cloud and to connect the through API.
- As a Developer I must create html page for the user to enter their respective requirement values and flask integration.
- As a user, I must verify the predicting results in webpage. As a Developer i must push the webpage in IBM Cloud in order to use by the customer and publish the release version .

6.2 Reports from JIRA



7.CODING & SOLUTIONING

7.1 Feature 1

In general, CKD regular testing takes longer time for the results so that diagnosis and treatment get late. In our project the model predicts the disease quickly.

7.2 Feature 2

As the model is deployed in IBM Cloud, wide range of people and hospitals get benefited.

8.TESTING

8.1 Test Cases

Test Scenario	Expected Result
Verify the UI elements	UI works fine
Verify the button elements working	Home page loads
Verify the button elements working	Predict page loads
Verify the UI elements	Shows the description about the project and the details of team members
Verify the predict button working	Predict page loads
Verify the UI elements	Show the Input boxes for the user to enter their inputs
verify the working of prediction page	Predict page works fine
verify the UI elements	Result page works fine

8.2 User Acceptance Testing

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the [ProductName] project at the time of the release to User Acceptance Testing (UAT).

2. Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	5	0	0	0	5
Duplicate	0	0	7	0	7
External	0	5	0	0	5
Fixed	2	0	0	5	7
Not Reproduced	0	7	0	0	7
Skipped	5	0	0	0	5
Won't Fix	6	0	0	8	14
Totals	17	12	7	13	50

3. Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	7	0	0	7
Client Application	51	0	0	51
Security	2	0	0	2
Outsource Shipping	3	0	0	3
Exception Reporting	9	0	0	9
Final Report Output	4	0	0	4
Version Control	2	0	0	2

9.RESULTS

9.1 Performance Metrics

IBM Watson Studio

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Projects / Early Detection of CKD AutoAI / Early Detection of CKD AutoAI

Experiment summary

Pipeline comparison

★ Rank by: Accuracy (Optimized) | Cross validation score

	Rank	↑	Name	Algorithm	Accuracy (Optimized) Cross Validation	Enhancements	Build time
★	1		Pipeline 4	LGBM Classifier	0.997	HPO-1 FE HPO-2	00:00:52
	2		Pipeline 3	LGBM Classifier	0.997	HPO-1 FE	00:00:33
	3		Pipeline 8	Random Forest Classifier	0.989	HPO-1 FE HPO-2	00:00:40
	4		Pipeline 7	Random Forest Classifier	0.989	HPO-1 FE	00:00:27
	5		Pipeline 6	Random Forest Classifier	0.989	HPO-1	00:00:05
	6		Pipeline 5	Random Forest Classifier	0.989	None	00:00:01
	7		Pipeline 2	LGBM Classifier	0.989	HPO-1	00:00:07
	8		Pipeline 1	LGBM Classifier	0.989	None	00:00:01

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Projects / Early Detection of CKD AutoAI / Early Detection of CKD AutoAI

Experiment summary

Pipeline comparison

★ Rank by: Accuracy (Optimized) | Cross validation score

Relationship map

Prediction column: classification

Progress map

Swap view

Experiment completed

8 PIPELINES GENERATED

8 pipelines generated from algorithms. See pipeline leaderboard below for more detail.

Time elapsed: 2 minutes

View log

Save code

Pipeline leaderboard

Accuracy (Optimized)

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Deployments / Early Detection of CKD / Early Detection of CKD

Early Detection of CKD

Deployed

Online

API reference

Test

Enter input data

Text input

JSON input

Enter data manually or use a CSV file to populate the spreadsheet. Max file size is 50 MB.

Download CSV template

Browse local files

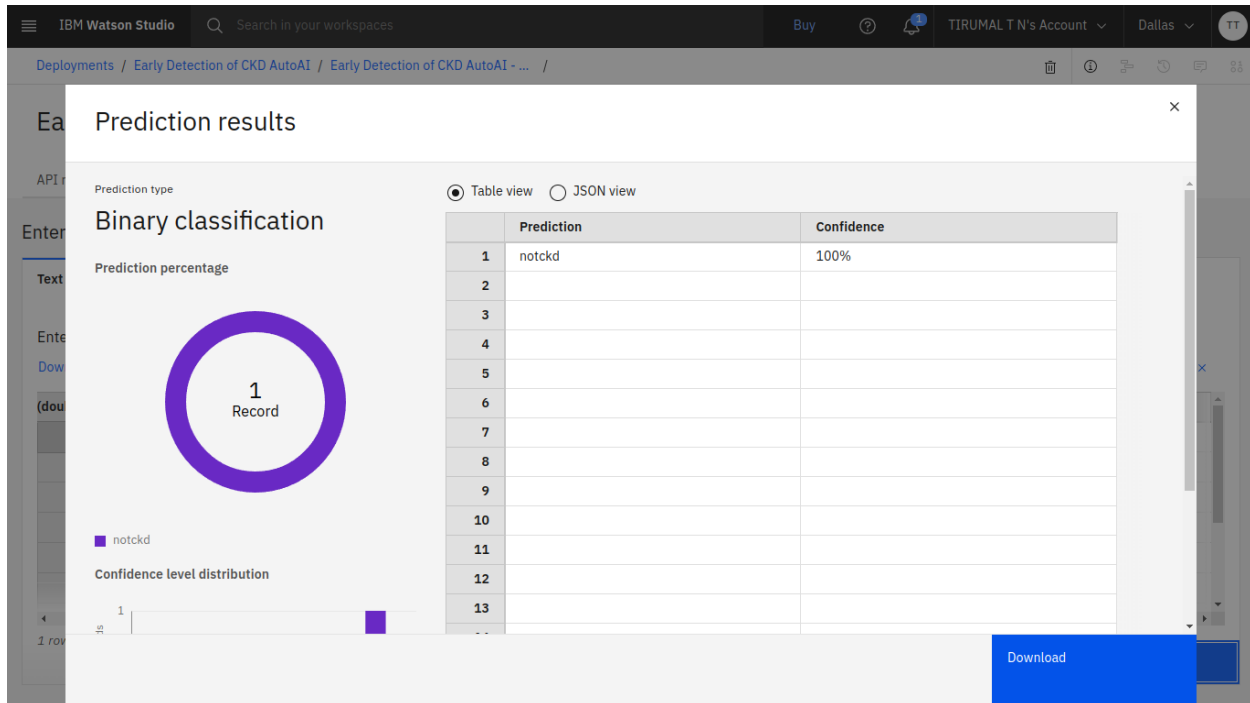
Search in space

Clear all

su (float64)	rbc (int64)	pc (int64)	pcc (int64)	ba (int64)	bgr (float64)	bu (float64)	sc (float64)	sod (float64)	pot (float64)	hemo (float64)	pcv (int64)
1	1	0	1	0	117	56	3.8	111	2.5	11.2	32
2											
3											
4											
5											
6											

1 row, 24 columns

Predict



10.ADVANTAGES AND DISADVANTAGES

ADVANTAGES

- No need to worry about infrastructure, platform and software.
- Initial setup and maintenance cost is reduced
- All under single umbrella, i.e., everything comes under single framework
- Improves health care services
- Reduces medical supervision procedures
- Ease of maintaining EHR (Electronic Health Care) records
- Proactively preparing for upcoming population health trends
- Acquiring new patients through personalized campaigns
- Reducing costs on appointment no show and readmission penalties

DISADVANTAGES

- Internet Connectivity is mandatory
- More steps to remember during creation of different services
- User interface creation is little bit tougher.

11.CONCLUSION

This study developed an algorithm for predicting CKD at an early stage. The dataset contains input parameters obtained from CKD patients, and the models are trained and validated using the valid parameters. To diagnose CKD, decision tree, random forest, and support vector machine learning models are built.

12.Future Enhancements

SMS/Email module

In the proposed system, admin assigns Id and password for doctors and receptionists and is intimated manually, so we can add SMS/Email module as a future enhancement where doctors and receptionists receive an SMS or Email regarding the Id and password.

Query module

We can add the query module as a future enhancement to the application where doctor, receptionist and admin of the application can interact with each other.

13.APPENDIX

SOURCE CODE:

APP.PY

```
1  @app.route('/')
2  def indexPage():
3      return render_template('index.html')
4  @app.route('/home')
5  def homePage():
6      return render_template("home.html")
7  @app.route('/prediction')
8  def predict_test():
9      return render_template('predict.html')
10 @app.route('/predict',methods=['post'])
11 def predict():
12     age= request.form["age"]
13     bp= request.form["bp"]
14     sg= request.form["sg"]
15     al= request.form["al"]
16     su= request.form["su"]
17     rbc= request.form["rbc"]
18     pc= request.form["pc"]
19     pcc= request.form["pcc"]
20     ba= request.form["ba"]
21     bgr= request.form["bgr"]
22     bu= request.form["bu"]
23     sc= request.form["sc"]
24     sod= request.form["sod"]
25     pot= request.form["pot"]
26     hemo= request.form["hemo"]
27     pcv= request.form["pcv"]
28     wbcc= request.form["wbcc"]
29     rbcc= request.form["rbcc"]
30     htn= request.form["htn"]
31     dm= request.form["dm"]
32     cad= request.form["cad"]
33     appet= request.form["appet"]
```

```

34     pe= request.form["pe"]
35     ane= request.form["ane"]
36     values = [[int(age), int(bp), float(sg), int(al), int(su), int(rbc), int(pc), int(pcc), int(ba), int(bgr), int(bu), float(sc), int(sod),
float(pot), float(hemo), int(pcv), int(wbcc), float(rbcc), int(htn), int(dm), int(cad), int(appet), int(pe), int(ane))]
37     print(values)
38     output=model.predict(values)
39     print(output)
40     if(output[0]==0): return render_template("failure.html")#output="CKD"
41     else: return render_template("success.html")#output="No CKD"
42

```

PREDICT.HTML

```

1  <!DOCTYPE html>
2  <html>
3  <head>
4      <meta charset="utf-8">
5      <meta name="viewport" content="width=device-width, initial-scale=1">
6      <link rel="stylesheet" type="text/css" href="{{ url_for('static', filename='css/predict.css')}}">
7  <title>Table test</title>
8  </head>
9  <body>
10     <form action="/predict" method="post">
11         <div class="table-border">
12             <h1 class="alert"><center><b>ENTER THE MEDICAL RECORDS:</b></center></h1>
13             <div class="kutty-table">
14                 <table >
15                     <tr>
16 <th class='tab'> AGE </th>
17 <th> <input type="number" step="0.01" placeholder="Enter the value" name= age required > </th>
18 <th class='tab2'> RC </th><th> <input class="tab4" type="number" step="0.01" placeholder="Enter the value" name= rbcc required> </th></tr>
19 <tr>
20 <th class='tab'> BP </th>
21 <th> <input type="number" step="0.01" placeholder="Enter the value" name= bp required > </th>
22 <th class='tab2'> POT </th>
23 <th> <input class="tab4" type="number" step="0.01" placeholder="Enter the value" name= pot required> </th>
24 </tr>
25 <tr>
26 <th class='tab'> SG </th>
27 <th> <input type="number" step="0.01" placeholder="Enter the value" name= sg required > </th>
28 <th class='tab2'>
29 <label for="ba">BA</label> </td>
30 <th> <select name="ba" id="ba" required >
31 <option value="">select the option given below </option>
32 <option value=1> present </option>
33 <option value=0> not present </option>
34 </select></th></tr>
35 <tr>
36 <th class='tab'> AL </th>
37 <th> <input type="number" step="0.01" placeholder="Enter the value" name= al required > </th>
38 <th class='tab2'>
39 <label for="pcc">PCC</label> </td>
40 <th> <select name="pcc" id="pcc" >
41 <option value="">select the option given below </option>
42 <option value=1> present </option>
43 <option value=0> not present </option>
44 </select></th></tr><tr>
45 <th class='tab'> SU </th>
46 <th> <input type="number" step="0.01" placeholder="Enter the value" name= su required > </th>
47 <th class='tab2'>
48 <label for="pc">PC</label> </td>
49 <th> <select name="pc" id="pc" required >
50 <option value="">select the option given below </option>
51 <option value=1> normal </option>
52 <option value=0> abnormal </option>
53 </select></th></tr><tr>
54 <th class='tab'> SOD </th>
55 <th> <input type="number" step="0.01" placeholder="Enter the value" name= sod required> </th>
56 <th class='tab2'>
57 <label for="rbc">RBC</label> </td>
58 <th> <select name="rbc" id="rbc" required >
59 <option value="">select the option given below </option>
60 <option value=1> normal </option>
61 <option value=0> abnormal </option>
62 </select></th></tr><tr>
63 <th class='tab'> WC </th>
64 <th> <input type="number" step="0.01" placeholder="Enter the value" name= wbcc required> </th>
65 <th class='tab3'>
66 <label for="htn">HTN</label> </td>
67 <th> <select name="htn" id="htn" required >
68 <option value="">select the option given below </option>
69 <option value=1> yes </option>
70 <option value=0> no </option>

```

```

71     </select>
72
73 </th>
74 </tr>
75 <tr>
76 <th class='tab'> PCV </th>
77 <th> <input type="number" step="0.01" placeholder="Enter the value" name= pcv required> </th>
78 <th class='tab3'>
79     <label for="dm">DM</label> </td>
80 <th>
81
82     <select name="dm" id="dm" required >
83         <option value="">select the option given below </option>
84         <option value=1> yes </option>
85         <option value=0> no </option>
86     </select>
87
88 </th>
89 </tr>
90 <tr>
91 <th class='tab'> HEMO </th>
92 <th> <input type="number" step="0.01" placeholder="Enter the value" name= hemo required> </th>
93 <th class='tab3'>
94     <label for="cad">CAD</label> </td>
95 <th>
96
97     <select name="cad" id="cad" required >
98         <option value="">select the option given below </option>
99         <option value=1> yes </option>
100         <option value=0> no </option>
101     </select>
102
103 </th>
104 </tr>
105 <tr>
106 <th class='tab'> BGR </th>
107 <th> <input type="number" step="0.01" placeholder="Enter the value" name= bgr required > </th>
108 <th class='tab3'>
109     <label for="appet">APPET</label> </td>
110 <th>
111
112     <select name="appet" id="appet" required >
113         <option value="">select the option given below </option>
114         <option value=1> Good </option>
115         <option value=0> Poor </option>
116     </select>
117
118 </th>
119 </tr>
120 <tr>
121 <th class='tab'> BU </th>
122 <th> <input type="number" step="0.01" placeholder="Enter the value" name= bu required > </th>
123 <th class='tab3'>
124     <label for="pe">PE</label> </td>
125 <th>
126
127     <select name="pe" id="pe" required >
128         <option value="">select the option given below </option>
129         <option value=1> yes </option>
130         <option value=0> no </option>
131     </select>
132
133 </th>
134 </tr>
135 <tr>
136 <th class='tab'> SC </th>
137 <th> <input type="number" step="0.01" placeholder="Enter the value" name= sc required > </th>
138 <th class='tab3'>
139     <label for="ane">ANE</label> </td>
140 <th>
141
142     <select name="ane" id="ane" required >
143         <option value="">select the option given below </option>
144         <option value=1> yes </option>
145         <option value=0> no </option>
146     </select>
147 </th>
148 </tr>
149
150 </table>
151
152 <button class="submit-button" type="submit" name="submit">Predict</button>
153 </div>
154 </div>

```



```

155     </form>
156 </body>
157 </html>

```

SCREENSHOTS:

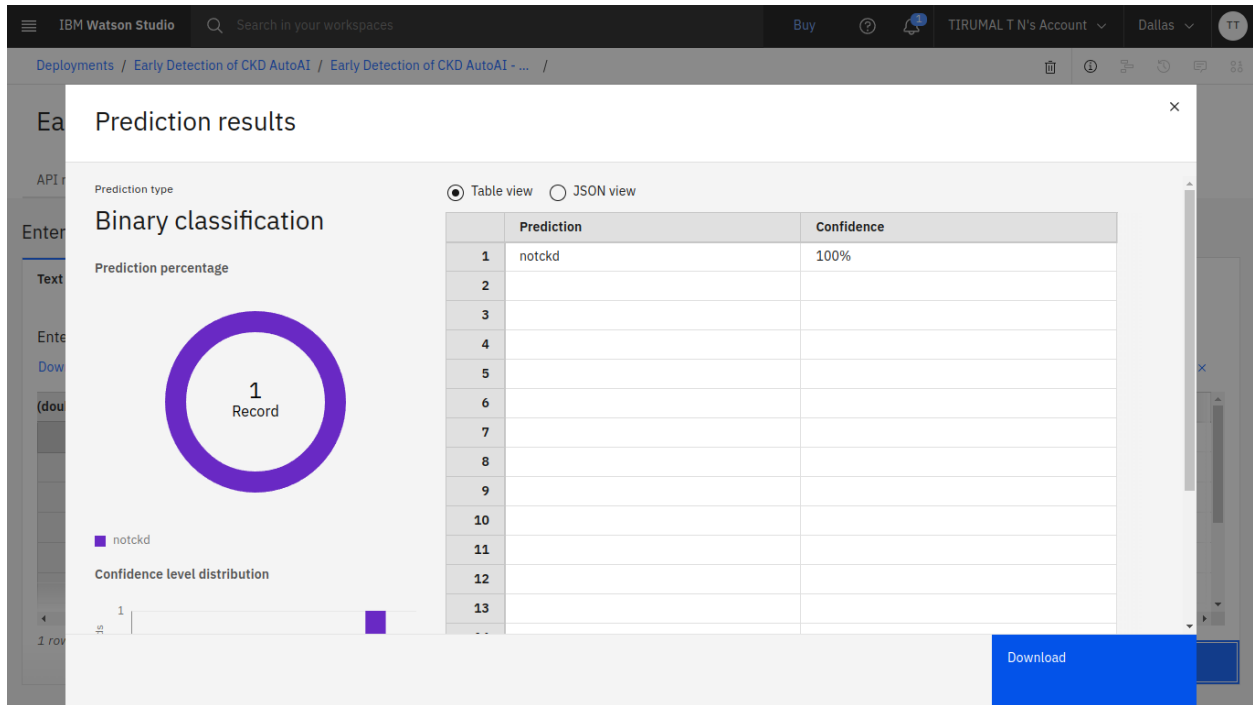
ENTER THE MEDICAL RECORDS:

AGE	<input type="text" value="0"/>	RC	<input type="text" value="0"/>
BP	<input type="text" value="0"/>	POT	<input type="text" value="0"/>
SG	<input type="text" value="0"/>	BA	<input type="text" value="present"/>
AL	<input type="text" value="0"/>	PCC	<input type="text" value="present"/>
SU	<input type="text" value="0"/>	PC	<input type="text" value="normal"/>
SOD	<input type="text" value="0"/>	RBC	<input type="text" value="normal"/>
WC	<input type="text" value="0"/>	HTN	<input type="text" value="yes"/>
PCV	<input type="text" value="0"/>	DM	<input type="text" value="yes"/>
HEMO	<input type="text" value="0"/>	CAD	<input type="text" value="yes"/>
BGR	<input type="text" value="0"/>	APPET	<input type="text" value="Good"/>
BU	<input type="text" value="0"/>	PE	<input type="text" value="yes"/>
SC	<input type="text" value="0"/>	ANE	<input type="text" value="yes"/>

[Predict](#)

SCREENSHOT OF SAMPLE ENTERED VALUES





SCREENSHOT OF OUPUT IN CLOUD AND LOCALHOST

DEMO LINK :

⇒ https://drive.google.com/file/d/14ubo7554wJ_6HI81jds3hXVypTj5o5Wb/view?usp=drivesdk

TEAM ID: PNT2022TMID44392