

Team ID: PNT2022TMID14357

Project name: Early Detection of Chronic Kidney Disease Using Machine Learning

Source Code:

File: app.py

```
from flask import Flask, render_template, request
import numpy as np
import pickle

app = Flask(__name__)
model = pickle.load(open('CKD.pkl', 'rb'))

@app.route('/')
def Home():
    return render_template('Home.html')

@app.route('/index', methods=['GET', 'POST'])
def index():
    return render_template("index.html")

@app.route("/predict", methods=['POST'])
def predict():
    if request.method == 'POST':
        bu = float(request.form['bu'])
        bgr = float(request.form['bgr'])
        cad = float(request.form['cad'])
        ane = float(request.form['ane'])
        pc = float(request.form['pc'])
        rbc = float(request.form['rbc'])
        dm = float(request.form['dm'])
        pe = float(request.form['pe'])

        values = np.array([[rbc, pc, bgr, bu, pe, ane, dm, cad]])
        prediction = model.predict(values)

    return render_template('result.html', prediction=prediction)
```

```
if __name__ == "__main__":  
    app.run(debug=True)
```

File name: ibmapp.py

```
import os
from flask import Flask, render_template, request
import numpy as np
import pickle
import requests

# NOTE: you must manually set API_KEY below using information retrieved from your IBM
      Cloud account.
API_KEY = "bsWv_IABYnj3nfgIHfYWsueomzdpXEVt8_UWMnvWO2j2d"
token_response = requests.post('https://iam.cloud.ibm.com/identity/token', data={"apikey":
      API_KEY, "grant_type": 'urn:ibm:params:oauth:grant-type:apikey'})
mltoken = token_response.json()["access_token"]

header = {'Content-Type': 'application/json', 'Authorization': 'Bearer ' + mltoken}

app = Flask(__name__)
model = pickle.load(open('CKD.pkl', 'rb'))

@app.route('/')
def Home():
    return render_template('Home.html')

@app.route('/index', methods=['GET', 'POST'])
def index():
    return render_template('index.html')

@app.route("/predict", methods=['POST'])
def predict():
    if request.method == 'POST':
        bu = float(request.form['bu'])
        bgr = float(request.form['bgr'])
        cad = float(request.form['cad'])
        ane = float(request.form['ane'])
        pc = float(request.form['pc'])
        rbc = float(request.form['rbc'])
        dm = float(request.form['dm'])
        pe = float(request.form['pe'])

        values = np.array([[rbc,pc,bgr,bu,pe,ane,dm,cad]])
        payload_scoring = {"input_data": [{"fields": ["bu","bgr","cad","ane","pc","rbc","dm","pe"],
```

```
"values": values}}}
```

```
response_scoring = requests.post('https://us-  
south.ml.cloud.ibm.com/ml/v4/deployments/489bfc2d-47c4-46e3-a46a-  
1e5901b7d816/predictions?version=2022-11-21',  
json=payload_scoring,headers={'Authorization': 'Bearer ' + mltoken})  
print("Scoring response")
```

```
prediction=response_scoring.json()  
print(prediction)  
print('Final prediction Result',prediction['prediction'][0]['values'][0][0])  
#prediction = model.predict(values)  
  
return render_template('result.html', showcase='Result '+str(prediction))
```

```
if __name__ == "__main__":  
    app.run(debug=True)
```

NOTE: manually define and pass the array(s) of values to be scored in the next line

File name: Home.html

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <title>Chronic Kidney Disease</title>
</head>
<body>
  <link rel="stylesheet" href="../static/textstyle.css">
  <div style="color:black;" class="container">
    <h2>Chronic Kidney Disease Detection</h2>
  </div>
  <div style="color:black;" class="ml-container">
    <form action="{{ url_for('index') }}" method="GET">

      <br>
      <button id="sub" type="Detect">Predict</button>
      <br>
      <br>
      <b>  <h3>Overview</h3>
      <p class="lead"><ul>
        Chronic kidney disease, also called chronic kidney failure, involves a gradual loss
        of kidney function. <br>
        Your kidneys filter wastes and excess fluids from your blood, which are then
        removed in your urine. Advanced <br>
        chronic kidney disease can cause dangerous levels of fluid, electrolytes and
        wastes to build up in your body.</ul></p>
        <br>

        <br>
        <h3>Treatment</h3>
        <p>Medication helps manage symptoms. In later stages, filtering the blood with a
        machine (dialysis) or a transplant may be required.</p>
        <br>
        <br>
        <p class='footer-description'>©IBM PROJECT</p>
      </b>
    </form>
  </div>
<style>
```

```
/* Background Image */
body
{
background-image:url("../static/kidney_bg.jpg");
height: 100%;

/* Center and scale the image nicely */
background-position: center;
background-repeat: no-repeat;
background-size: 100% 100%;

}
```

```
/* Color */
body{
    font-family: Helvetica,sans-serif;
    text-align: center;
    margin: 0;
    padding: 0;
    width: 100%;
    height: 100%;
    display: flex;
    flex-direction: column;
}
```

```
/* Heading Font */
.container-heading{
    margin: 0;
}
```

```
.heading_font{
    color: black;
    text-align: center;
    font-family: 'Colonna MT', cursive;
    font-size: 100px;
    font-weight: normal;
}
```

```
/* Detect Button */
#sub {
    width: 200px;
    height: 40px;
    font-family: "Berlin Sans Fb";
    font-size: 20px;
    text-align: center;
    border-radius: 14px;
    font-size: 18px;
    background-image:
url("https://static.videezy.com/system/resources/thumbnails/000/051/538/original/Medic
al-Health-Background.jpg");
    background-position: center;
    border-image-source: linear-gradient(to left, #743ad5, #d53a9d);

}
</style>

</body>
</html>
```

File name: index.html

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <title>Chronic Kidney Disease Model</title>
  <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-
    awesome/4.7.0/css/font-awesome.min.css">
</head>
<body>
  <div style="color:black;" class="container">
    <h2 class='container-heading'><span class="heading_font">Chronic Kidney Disease
    Detection</span></h2>
  </div>

  <div style="color:black;" class="ml-container">
    <form action="{{ url_for('predict') }}" method="POST">
      <br>
      <h3>Blood Urea</h3>
      <input id="first" name="bu" placeholder="value" required="required">
      <br>
      <h3>Blood Glucose Random</h3>
      <input id="second" name="bgr" placeholder="value" required="required">
      <br>
      <h3>Coronary Artery Disease</h3>
      <input id="third" name="cad" placeholder="Yes= 1, No= 0" required="required">
      <br>
      <h3>Anemia</h3>
      <input id="fourth" name="ane" placeholder="Yes= 1, No=0" required="required">
      <br>
      <h3>Pus Cell</h3>
      <input id="fifth" name="pc" placeholder="Abnormal= 1, Normal= 0"
      required="required">
      <br>
      <h3>Red Blood Cells</h3>
      <input id="sixth" name="rbc" placeholder="Abnormal= 1, Normal= 0"
      required="required">
      <br>
      <h3>DiabetesMellitus</h3>
      <input id="seventh" name="dm" placeholder="Yes= 1, No= 0"
      required="required">
```



```
<br>
<h3>Pedal Edema</h3>
  <input id="eight" name="pe" placeholder="Yes= 1, No= 0" required="required">
<br>
<br>
<br>
<button id="sub" type="predict ">Predict</button>
<br>
<br>
<br>
<p class='footer-description'>©IBM PROJECT</p>

</form>
</div>
```

```
<style>
```

```
/* Background Image */
body
{
background-image:url("static/kidney5_bg.jpg");
height: 100%;

/* Center and scale the image nicely */
background-position: center;
background-repeat: no-repeat;
background-size: 100% 100%;

}

/* Color */
body{
  font-family: "Bell MT";
  font-size: 20px;
  text-align: center;
  margin: 0;
  padding: 0;
```

```
width: 100%;  
height: 100%;  
display: flex;  
flex-direction: column;  
}
```

```
/* Heading Font */  
.container-heading{  
margin: 0;  
}
```

```
.heading_font{  
color: black;  
font-family: 'Colonna MT', cursive;  
font-size: 100px;  
font-weight: normal;  
text-align: center;  
}
```

```
/* Box */  
#first {  
border-radius: 0px;  
height: 30px;  
width: 300px;  
font-size: 20px;  
text-align: center;  
}
```

```
#second {  
border-radius: 0px;  
height: 30px;  
width: 300px;  
font-size: 20px;  
text-align: center;  
}
```

```
#third {
```

```
border-radius: 0px;  
height: 30px;  
width: 300px;  
font-size: 20px;  
text-align: center;  
}
```

```
#fourth {  
border-radius: 0px;  
height: 30px;  
width: 300px;  
font-size: 20px;  
text-align: center;  
}
```

```
#fifth {  
border-radius: 0px;  
height: 30px;  
width: 300px;  
font-size: 20px;  
text-align: center;  
}
```

```
#sixth {  
border-radius: 0px;  
height: 30px;  
width: 300px;  
font-size: 20px;  
text-align: center;  
}
```

```
#seventh {  
border-radius: 0px;  
height: 30px;  
width: 300px;  
font-size: 20px;  
text-align: center;  
}
```

```
#eight {
```

```
border-radius: 0px;  
height: 30px;  
width: 300px;  
font-size: 20px;  
text-align: center;  
}
```

```
/* Submit Button */
```

```
#sub {  
    width: 100px;  
    height: 40px;  
    font-family: "Berlin Sans Fb";  
    font-size: 20px;  
    text-align: center;  
    border-radius: 14px;  
    font-size: 18px;  
    background-image:  
url("https://static.videezy.com/system/resources/thumbnails/000/051/538/original/Medic  
al-Health-Background.jpg");  
    background-position: center;  
    border-color: red;  
}
```

```
</style>
```

```
</body>
```

```
</html>
```

File name: result.html

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Result of Chronic kidney disease</title>
</head>

<body>
  <link rel="stylesheet" href="../static/textstyle.css">

  <div style="color:black;" class="container">
    <form action="{ url_for('predict')}" method="post">
      <h2 class='container-heading'><span class="heading_font">Chronic Kidney
      Disease Dectection</span></h2>
      <!-- Result -->
      <div style="color:black;" class="results">
        {% if prediction==0 %}
          <div class="box">
            <center></center>
            <div class="content">
              <center><h2 style="font-family:Verdana, Geneva, Tahoma, sans-serif;color:
              rgb(42, 4, 255) ;"><u>Result</u></h2></center>
              <h3>Result : <i style="color: red;font-family: 'Courier New', Courier,
              monospace;">Positive</i></h3>
              <p style="font-family:cursive ;">The patient <b>got</b> the Chronic kidney
              disease ☹️ </p><br/>
              <center><p style="font-family:fantasy ;">Take care of health and please
              consult any nephrologist</p></center>

            </div>
          </div>

          {% elif prediction==1 %}
            <div class="box">
              

              <div class="content">
                <center><h2 style="font-family:Verdana, Geneva, Tahoma, sans-serif;color:
                rgb(42, 4, 255) ;"><u>Result</u></h2></center>
                <h3>Result : <i style="color: rgb(41, 128, 1);font-family: 'Courier New', Courier,
                monospace;">Negative</i></h3>

              </div>
            </div>
          </div>
        </div>
      </div>
    </form>
  </div>
</body>
</html>
```

`<p style="font-family:cursive ;">The patient have no the Chronic
kidney disease 😊 </p>
`

`<center><p style="font-family:fantasy ;"> 🍷 Take care of health 🍷 and please
consult any nephrologist </p></center>`

`{% endif %}`

`</div>`

`</form>`

`</div>`

`<div>`

`

`

`<p class='footer-description'>©IBM PROJECT</p>`

`</div>`

`</body>`

`</html>`

File name: textstyle.css

```
body{
    background-image: url("static/docpat.jpg");
    background-repeat: no-repeat;
    background-size: cover;
}
.container {
    /*position:;*/
    width:1200px;
    height:300px;
    margin: auto;

    width: 25%;
}
.container .box{

    position:absolute;
    width:calc(400px - 30px);
    height:calc(300px- 30px);
    background: rgb(186, 218, 7);
    float:left;
    margin: 15px;
    box-sizing: border-box;
    overflow: hidden;
    border: 9px;
    border-color:lightcyan;
    border-style:groove;
    border-radius: 60px;
}
.container.box.content{
    position:absolute;
    top: 100%;
    height: calc(100% -100px);
    text-align: center;
    padding: 20px;
    box-sizing: border-box;
}
.container.box.content h2{
    margin: 0 0 10px;
```

```
padding: 0;
color: #fff;
font-size: 30px;
}
.container.box.content p{
margin:0;
padding: 0;
color: #CF0A0A;
}
.container.box.content b{
margin: 0;
color: #CF0A0A;
}
.hp {
float: right;
margin: 0 0 0 5px;
}

.on-dark {
background: #222;

}

.border-gradient {
border: 10px solid;
border-image-slice: 1;
border-width: 5px;
}
.border-gradient-purple {
border-image-source: linear-gradient(to left, #743ad5, #d53a9d);
}
```