

SPRINT 4: Classification of Arrhythmia by Using Deep Learning With 2-D ECG Spectral Image Representation

Team ID: PNT2022TMID00351

Team Members: Shreya, Shameem Fathima, Safina, Nivedha

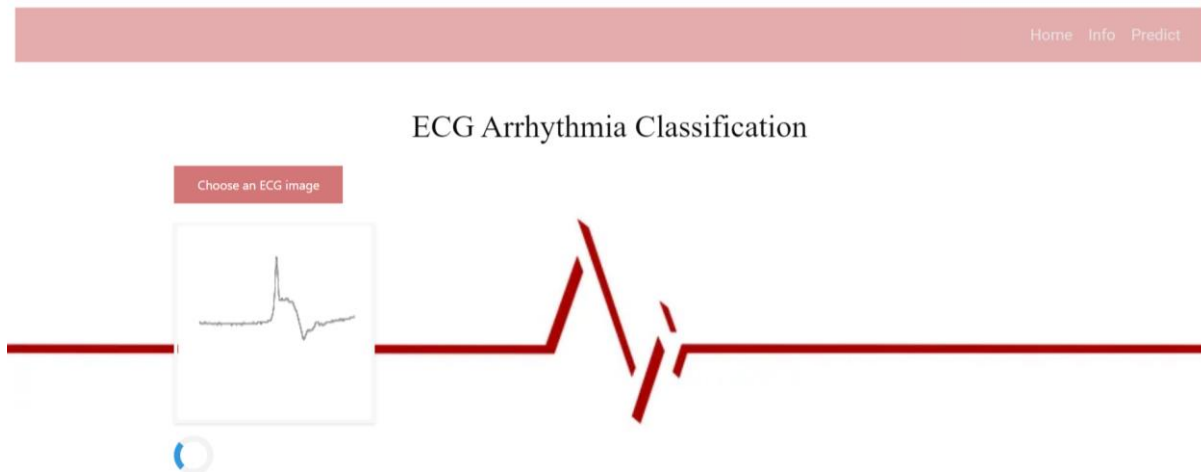
Code: Updated in GitHub in the Deliverables section in Sprint 4 folder.

Description of USN and Screenshots:

USN-6:

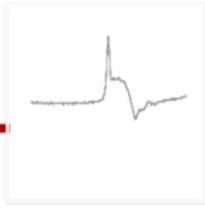
As a user, I can upload an ECG image and view the result. The type of Arrhythmia such as Left Bundle Branch Block, Normal, Premature Atrial Contraction, Premature Ventricular Contractions, Right Bundle Branch Block and Ventricular Fibrillation is displayed.

Screenshot:



ECG Arrhythmia Classification

Choose an ECG image



Result:

Premature Atrial Contraction

USN-7:

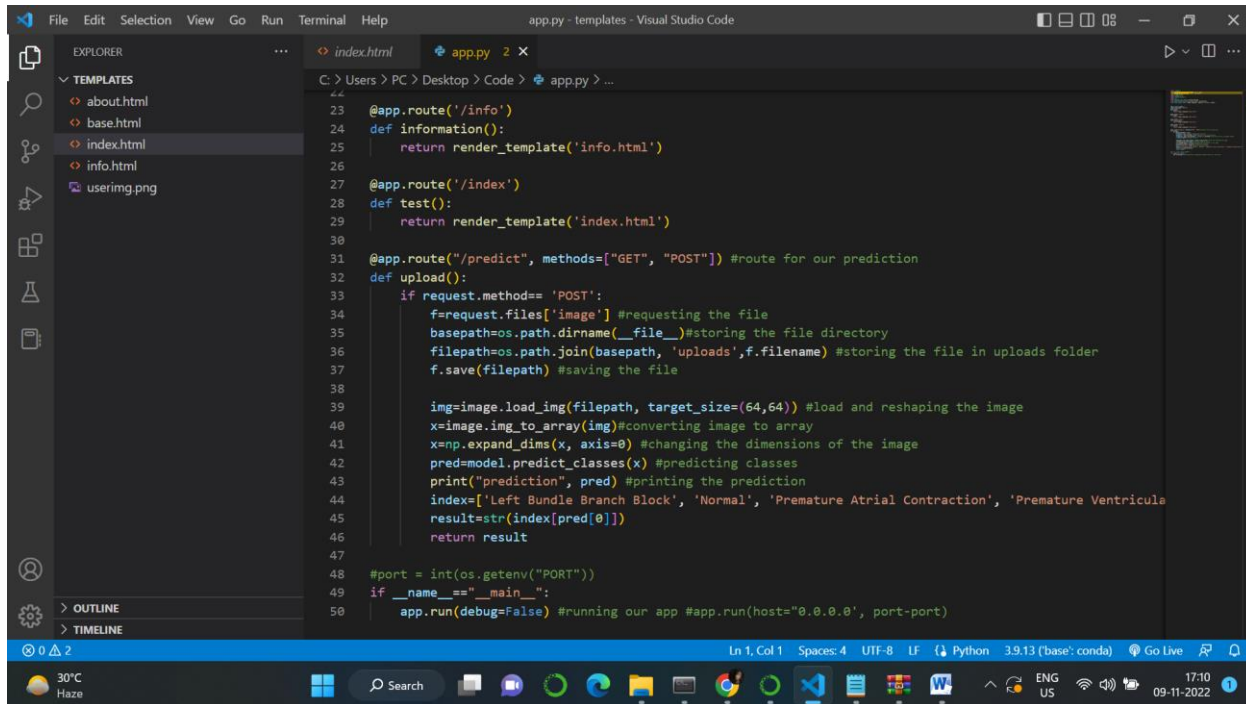
As a user, I can upload any ECG image and view the result. The algorithm is designed to denote the type of Arrhythmia such as Left Bundle Branch Block, Normal, Premature Atrial Contraction, Premature Ventricular Contractions, Right Bundle Branch Block and Ventricular Fibrillation.

The HTML file used to build the Info page includes:

```

EXPLORER
  TEMPLATES
    about.html
    base.html
    index.html
    info.html
    userimg.png
  index.html x
    index.html > ...
      48 padding: 20px;
      49 }
      50 </style>
      51 <div class="heading">
      52   ECG Arrhythmia Classification
      53 </div>
      54
      55 <div>
      56   <form action="" id="upload-file" method="post" enctype="multipart/form-data">
      57     <label for="imageUpload" class="upload-label">
      58       Choose an ECG image
      59     </label>
      60     <input type="file" name="image" id="imageUpload" accept=".png, .jpg, .jpeg">
      61   </form>
      62
      63   <div class="image-section" style="display:none;">
      64     <div class="img-preview">
      65       <div id="imagePreview">
      66     </div>
      67   </div>
      68   <div>
      69     <button type="button" class="btn btn-primary btn-lg" id="btn-predict">Predict!</button>
      70   </div>
      71 </div>
      72
      73 <div class="loader" style="display:none;"></div>
      74
      75 <h3>
      76   <span id="result" style="font-size:17px;"> </span>
    
```

The Python code behind classification of Arrhythmia :



```
44
23 @app.route('/info')
24 def information():
25     return render_template('info.html')
26
27 @app.route('/index')
28 def test():
29     return render_template('index.html')
30
31 @app.route("/predict", methods=['GET', 'POST']) #route for our prediction
32 def upload():
33     if request.method== 'POST':
34         f=request.files['image'] #requesting the file
35         basepath=os.path.dirname(__file__)#storing the file directory
36         filepath=os.path.join(basepath, 'uploads',f.filename) #storing the file in uploads folder
37         f.save(filepath) #saving the file
38
39         img=image.load_img(filepath, target_size=(64,64)) #load and reshaping the image
40         x=image.img_to_array(img)#converting image to array
41         x=np.expand_dims(x, axis=0) #changing the dimensions of the image
42         pred=model.predict_classes(x) #predicting classes
43         print("prediction", pred) #printing the prediction
44         index=['Left Bundle Branch Block', 'Normal', 'Premature Atrial Contraction', 'Premature Ventricula
45         result=str(index[pred[0]])
46         return result
47
48 #port = int(os.getenv("PORT"))
49 if __name__=="__main__":
50     app.run(debug=False) #running our app #app.run(host="0.0.0.0", port=port)
```