

PROJECT DEVELOPMENT PHASE

Model Performance Test

Date	19 November 2022
Team ID	PNT2022TMID01315
Project Name	Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image Representation.
Maximum Marks	10 Marks

Model Performance Testing:

Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Values	Screenshot
1.	Model Summary	The 2-D CNN model consists of two convolutional layers, two pooling layers, a flatten layer, and 6 dense layers that are designed for extracting robust features from the input spectrograms.	<pre> In [30]: model.summary() Model: "sequential" _____ Layer (type) Output Shape Param # ===== conv2d (Conv2D) (None, 62, 62, 32) 896 max_pooling2d (MaxPooling2D) (None, 31, 31, 32) 0 conv2d_1 (Conv2D) (None, 29, 29, 32) 9248 max_pooling2d_1 (MaxPooling2D) (None, 14, 14, 32) 0 flatten (Flatten) (None, 6272) 0 dense (Dense) (None, 128) 802944 dense_1 (Dense) (None, 128) 16512 dense_2 (Dense) (None, 128) 16512 dense_3 (Dense) (None, 128) 16512 dense_4 (Dense) (None, 128) 16512 dense_5 (Dense) (None, 6) 774 ===== Total params: 879,910 Trainable params: 879,910 Non-trainable params: 0 </pre>

2.	Accuracy	<div>Training Accuracy: 97.28%</div> <div>Validation Accuracy: 86.45%</div>	<div><pre>model.fit_generator(generator=x_train,steps_per_epoch = len(x_train), epochs=9, validation_data=x_test,validation_steps = len(x_test))</pre></div> <div>C:\Users\LIKITHA S\AppData\Local\Temp\ipykernel_10464\788911318.py:1: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use `Model.fit`, which supports generators. model.fit_generator(generator=x_train,steps_per_epoch = len(x_train), epochs=9, validation_data=x_test,validation_steps = len(x_test))</div> <div>Epoch 1/9 480/480 [=====] - 132s 273ms/step - loss: 1.3902 - accuracy: 0.4888 - val_loss: 1.6089 - val_accuracy: 0.4648 Epoch 2/9 480/480 [=====] - 123s 256ms/step - loss: 0.7217 - accuracy: 0.7209 - val_loss: 0.8790 - val_accuracy: 0.7370 Epoch 3/9 480/480 [=====] - 112s 233ms/step - loss: 0.2904 - accuracy: 0.9046 - val_loss: 0.5490 - val_accuracy: 0.8284 Epoch 4/9 480/480 [=====] - 115s 240ms/step - loss: 0.1850 - accuracy: 0.9441 - val_loss: 0.6074 - val_accuracy: 0.8621 Epoch 5/9 480/480 [=====] - 125s 261ms/step - loss: 0.1466 - accuracy: 0.9538 - val_loss: 0.4924 - val_accuracy: 0.8632 Epoch 6/9 480/480 [=====] - 106s 222ms/step - loss: 0.1220 - accuracy: 0.9612 - val_loss: 0.5795 - val_accuracy: 0.8536 Epoch 7/9 480/480 [=====] - 115s 240ms/step - loss: 0.1066 - accuracy: 0.9658 - val_loss: 0.6635 - val_accuracy: 0.8618 Epoch 8/9 480/480 [=====] - 115s 239ms/step - loss: 0.0923 - accuracy: 0.9704 - val_loss: 0.6324 - val_accuracy: 0.8589 Epoch 9/9 480/480 [=====] - 119s 248ms/step - loss: 0.0837 - accuracy: 0.9728 - val_loss: 0.8507 - val_accuracy: 0.8645</div> <div><keras.callbacks.History at 0x22c322dda60></div>
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