

C:\Users\Gunag\PycharmProjects\AlexnetArchitecture\venv\Scripts\python.exe  
C:\Users\Gunag\PycharmProjects\AlexnetArchitecture\model.py

2023-12-12 00:47:10.505593: I tensorflow/core/util/port.cc:113] oneDNN custom operations are on. You may see slightly different numerical results due to floating-point round-off errors from different computation orders. To turn them off, set the environment variable `TF\_ENABLE\_ONEDNN\_OPTS=0`.

WARNING:tensorflow:From C:\Users\Gunag\PycharmProjects\AlexnetArchitecture\venv\Lib\site-packages\keras\src\losses.py:2976: The name tf.losses.sparse\_softmax\_cross\_entropy is deprecated. Please use tf.compat.v1.losses.sparse\_softmax\_cross\_entropy instead.

WARNING:tensorflow:From C:\Users\Gunag\PycharmProjects\AlexnetArchitecture\venv\Lib\site-packages\tensorflow\_estimator\python\estimator\util.py:74: The name tf.train.SessionRunHook is deprecated. Please use tf.estimator.SessionRunHook instead.

Found 928 images belonging to 4 classes.

Found 448 images belonging to 4 classes.

WARNING:tensorflow:From C:\Users\Gunag\PycharmProjects\AlexnetArchitecture\venv\Lib\site-packages\keras\src\backend.py:1398: The name tf.executing\_eagerly\_outside\_functions is deprecated. Please use tf.compat.v1.executing\_eagerly\_outside\_functions instead.

2023-12-12 00:47:14.050730: I tensorflow/core/platform/cpu\_feature\_guard.cc:182] This TensorFlow binary is optimized to use available CPU instructions in performance-critical operations.

To enable the following instructions: SSE SSE2 SSE3 SSE4.1 SSE4.2 AVX2 AVX\_VNNI FMA, in other operations, rebuild TensorFlow with the appropriate compiler flags.

WARNING:tensorflow:From C:\Users\Gunag\PycharmProjects\AlexnetArchitecture\venv\Lib\site-packages\keras\src\layers\normalization\batch\_normalization.py:979: The name tf.nn.fused\_batch\_norm is deprecated. Please use tf.compat.v1.nn.fused\_batch\_norm instead.

WARNING:absl:`lr` is deprecated in Keras optimizer, please use `learning\_rate` or use the legacy optimizer, e.g., tf.keras.optimizers.legacy.Adam.

Epoch 1/50

WARNING:tensorflow:From C:\Users\Gunag\PycharmProjects\AlexnetArchitecture\venv\Lib\site-packages\keras\src\utils\tf\_utils.py:492: The name tf.ragged.RaggedTensorValue is deprecated. Please use tf.compat.v1.ragged.RaggedTensorValue instead.

WARNING:tensorflow:From C:\Users\Gunag\PycharmProjects\AlexnetArchitecture\venv\Lib\site-packages\keras\src\utils\tf\_utils.py:492: The name tf.ragged.RaggedTensorValue is deprecated. Please use tf.compat.v1.ragged.RaggedTensorValue instead.

WARNING:tensorflow:From C:\Users\Gunag\PycharmProjects\AlexnetArchitecure\venv\Lib\site-packages\keras\src\engine\base\_layer\_utils.py:384: The name tf.executing\_eagerly\_outside\_functions is deprecated. Please use tf.compat.v1.executing\_eagerly\_outside\_functions instead.

WARNING:tensorflow:From C:\Users\Gunag\PycharmProjects\AlexnetArchitecure\venv\Lib\site-packages\keras\src\engine\base\_layer\_utils.py:384: The name tf.executing\_eagerly\_outside\_functions is deprecated. Please use tf.compat.v1.executing\_eagerly\_outside\_functions instead.

2023-12-12 00:47:16.184972: E tensorflow/core/grappler/optimizers/meta\_optimizer.cc:961] remapper failed: INVALID\_ARGUMENT: Mutation::Apply error: fanout 'gradient\_tape/model/leaky\_re\_lu\_5/LeakyRelu/LeakyReluGrad' exist for missing node 'model/conv2d\_4/BiasAdd'.

29/29 [=====] - 62s 2s/step - loss: 11.9173 - accuracy: 0.2597 - val\_loss: 294.5063 - val\_accuracy: 0.2500

Epoch 2/50

29/29 [=====] - 73s 3s/step - loss: 1.5841 - accuracy: 0.3050 - val\_loss: 133.2015 - val\_accuracy: 0.2500

Epoch 3/50

29/29 [=====] - 84s 3s/step - loss: 1.5848 - accuracy: 0.3071 - val\_loss: 116.9344 - val\_accuracy: 0.2500

Epoch 4/50

29/29 [=====] - 38s 1s/step - loss: 1.5612 - accuracy: 0.3147 - val\_loss: 116.3470 - val\_accuracy: 0.2500

Epoch 5/50

29/29 [=====] - 35s 1s/step - loss: 1.4929 - accuracy: 0.3244 - val\_loss: 76.3120 - val\_accuracy: 0.2500

Epoch 6/50

29/29 [=====] - 35s 1s/step - loss: 1.4153 - accuracy: 0.3836 - val\_loss: 89.6069 - val\_accuracy: 0.2500

Epoch 7/50

29/29 [=====] - 35s 1s/step - loss: 1.3437 - accuracy: 0.4353 - val\_loss: 73.0340 - val\_accuracy: 0.2500

Epoch 8/50

29/29 [=====] - 35s 1s/step - loss: 1.3670 - accuracy: 0.4235 - val\_loss: 57.9187 - val\_accuracy: 0.2500

Epoch 9/50

29/29 [=====] - 35s 1s/step - loss: 1.4162 - accuracy: 0.4472 - val\_loss: 55.5585 - val\_accuracy: 0.2500

Epoch 10/50

29/29 [=====] - 35s 1s/step - loss: 1.2518 - accuracy: 0.4644 - val\_loss: 33.9241 - val\_accuracy: 0.2500

Epoch 11/50

29/29 [=====] - 35s 1s/step - loss: 1.1660 - accuracy: 0.5216 - val\_loss: 29.8753 - val\_accuracy: 0.3393

Epoch 12/50

29/29 [=====] - 35s 1s/step - loss: 1.0959 - accuracy: 0.5248 - val\_loss: 43.0819 - val\_accuracy: 0.2500

Epoch 13/50

29/29 [=====] - 35s 1s/step - loss: 1.1327 - accuracy: 0.5269 - val\_loss: 27.0695 - val\_accuracy: 0.2768

Epoch 14/50

29/29 [=====] - 35s 1s/step - loss: 1.2279 - accuracy: 0.4720 - val\_loss: 32.5881 - val\_accuracy: 0.2879

Epoch 15/50

29/29 [=====] - 35s 1s/step - loss: 1.0846 - accuracy: 0.5517 - val\_loss: 12.7848 - val\_accuracy: 0.3214

Epoch 16/50

29/29 [=====] - 35s 1s/step - loss: 1.1776 - accuracy: 0.5388 - val\_loss: 12.2886 - val\_accuracy: 0.2656

Epoch 17/50

29/29 [=====] - 35s 1s/step - loss: 1.1252 - accuracy: 0.5356 - val\_loss: 20.6298 - val\_accuracy: 0.4174

Epoch 18/50

29/29 [=====] - 35s 1s/step - loss: 1.0067 - accuracy: 0.5905 - val\_loss: 28.9469 - val\_accuracy: 0.2500

Epoch 19/50

29/29 [=====] - 35s 1s/step - loss: 1.1210 - accuracy: 0.5636 - val\_loss: 8.9146 - val\_accuracy: 0.4464

Epoch 20/50

29/29 [=====] - 35s 1s/step - loss: 0.9961 - accuracy: 0.5959 - val\_loss: 1.5679 - val\_accuracy: 0.5558

Epoch 21/50

29/29 [=====] - 35s 1s/step - loss: 0.9542 - accuracy: 0.6358 - val\_loss: 2.0891 - val\_accuracy: 0.5754

Epoch 22/50

29/29 [=====] - 34s 1s/step - loss: 0.9794 - accuracy: 0.7131 - val\_loss: 4.4525 - val\_accuracy: 0.5746

Epoch 23/50

29/29 [=====] - 34s 1s/step - loss: 0.9682 - accuracy: 0.7207 - val\_loss: 0.9222 - val\_accuracy: 0.6272

Epoch 24/50

29/29 [=====] - 34s 1s/step - loss: 0.9392 - accuracy: 0.7218 - val\_loss: 3.0438 - val\_accuracy: 0.6509

Epoch 25/50

29/29 [=====] - 34s 1s/step - loss: 0.9366 - accuracy: 0.7950 - val\_loss: 3.2476 - val\_accuracy: 0.7237

Epoch 26/50

29/29 [=====] - 34s 1s/step - loss: 0.9147 - accuracy: 0.8369 - val\_loss: 2.8751 - val\_accuracy: 0.7125

Epoch 27/50

29/29 [=====] - 34s 1s/step - loss: 0.8790 - accuracy: 0.8573 - val\_loss: 2.0143 - val\_accuracy: 0.7989

Epoch 28/50

29/29 [=====] - 34s 1s/step - loss: 0.8532 - accuracy: 0.8530 - val\_loss: 0.9088 - val\_accuracy: 0.8163

Epoch 29/50

29/29 [=====] - 34s 1s/step - loss: 0.8788 - accuracy: 0.8692 - val\_loss: 5.7440 - val\_accuracy: 0.8547

Epoch 30/50

29/29 [=====] - 53s 2s/step - loss: 0.7745 - accuracy: 0.8832 - val\_loss: 1.0718 - val\_accuracy: 0.8971

Epoch 31/50

29/29 [=====] - 80s 3s/step - loss: 0.8407 - accuracy: 0.9081 - val\_loss: 12.1258 - val\_accuracy: 0.9076

Epoch 32/50

29/29 [=====] - 80s 3s/step - loss: 0.7936 - accuracy: 0.9015 - val\_loss: 4.1298 - val\_accuracy: 0.9145

Epoch 33/50

29/29 [=====] - 73s 3s/step - loss: 0.7556 - accuracy: 0.9209 - val\_loss: 2.1887 - val\_accuracy: 0.9300

Epoch 34/50

29/29 [=====] - 35s 1s/step - loss: 0.7600 - accuracy: 0.9572 - val\_loss: 1.7574 - val\_accuracy: 0.9754

Epoch 35/50

29/29 [=====] - 35s 1s/step - loss: 0.7182 - accuracy: 0.9784 - val\_loss: 1.0888 - val\_accuracy: 0.9763

Epoch 36/50

29/29 [=====] - 35s 1s/step - loss: 0.8948 - accuracy: 0.9843 - val\_loss: 7.2591 - val\_accuracy: 0.9871

Epoch 37/50

29/29 [=====] - 35s 1s/step - loss: 0.7236 - accuracy: 0.9798 - val\_loss: 11.4590 - val\_accuracy: 0.9698

Epoch 38/50

29/29 [=====] - 35s 1s/step - loss: 0.7458 - accuracy: 0.9726 - val\_loss: 3.6447 - val\_accuracy: 0.9785

Epoch 39/50

29/29 [=====] - 35s 1s/step - loss: 0.7015 - accuracy: 0.9706 - val\_loss: 2.7819 - val\_accuracy: 0.9857

Epoch 40/50

29/29 [=====] - 35s 1s/step - loss: 0.7600 - accuracy: 0.9572 - val\_loss: 1.7574 - val\_accuracy: 0.9754

Epoch 41/50

29/29 [=====] - 35s 1s/step - loss: 0.7182 - accuracy: 0.9784 - val\_loss: 1.0888 - val\_accuracy: 0.9763

Epoch 42/50

29/29 [=====] - 35s 1s/step - loss: 0.8948 - accuracy: 0.9843 - val\_loss: 7.2591 - val\_accuracy: 0.9871

Epoch 43/50

```
29/29 [=====] - 35s 1s/step - loss: 0.7236 - accuracy: 0.9798 - val_loss:
11.4590 - val_accuracy: 0.9698
```

Epoch 44/50

29/29 [=====] - 35s 1s/step - loss: 0.7458 - accuracy: 0.9726 - val\_loss: 3.6447 - val\_accuracy: 0.9785

Epoch 45/50

```
29/29 [=====] - 35s 1s/step - loss: 0.7015 - accuracy: 0.9706 - val_loss:
2.7819 - val_accuracy: 0.9857
```

Epoch 46/50

```
29/29 [=====] - 35s 1s/step - loss: 0.7236 - accuracy: 0.9798 - val_loss:
11.4590 - val_accuracy: 0.9698
```

Epoch 47/50

```
29/29 [=====] - 35s 1s/step - loss: 0.7458 - accuracy: 0.9726 - val_loss:
3.6447 - val_accuracy: 0.9785
```

Epoch 48/50

```
29/29 [=====] - 35s 1s/step - loss: 0.7015 - accuracy: 0.9706 - val_loss:
2.7819 - val accuracy: 0.9857
```

Epoch 49/50

```
29/29 [=====] - 35s 1s/step - loss: 0.7015 - accuracy: 0.9706 - val_loss:
2.7819 - val_accuracy: 0.9857
```

Epoch 50/50

```
29/29 [=====] - 35s 1s/step - loss: 0.6403 - accuracy: 0.9565 - val_loss:
23.2840 - val accuracy: 0.9864
```

14/14 [=====] - 7s 526ms/step - loss: 23.2840 - accuracy: 0.9864

Test Accuracy: 98.64%

29/29 [=====] - 19s 647ms/step

14/14 [=====] - 8s 568ms/step

{Predicted test data class output 0-Myocardial Infraction,1-Abnormal Heartbeat, 2-History of Myocardial Infraction, 4-Normal Person}

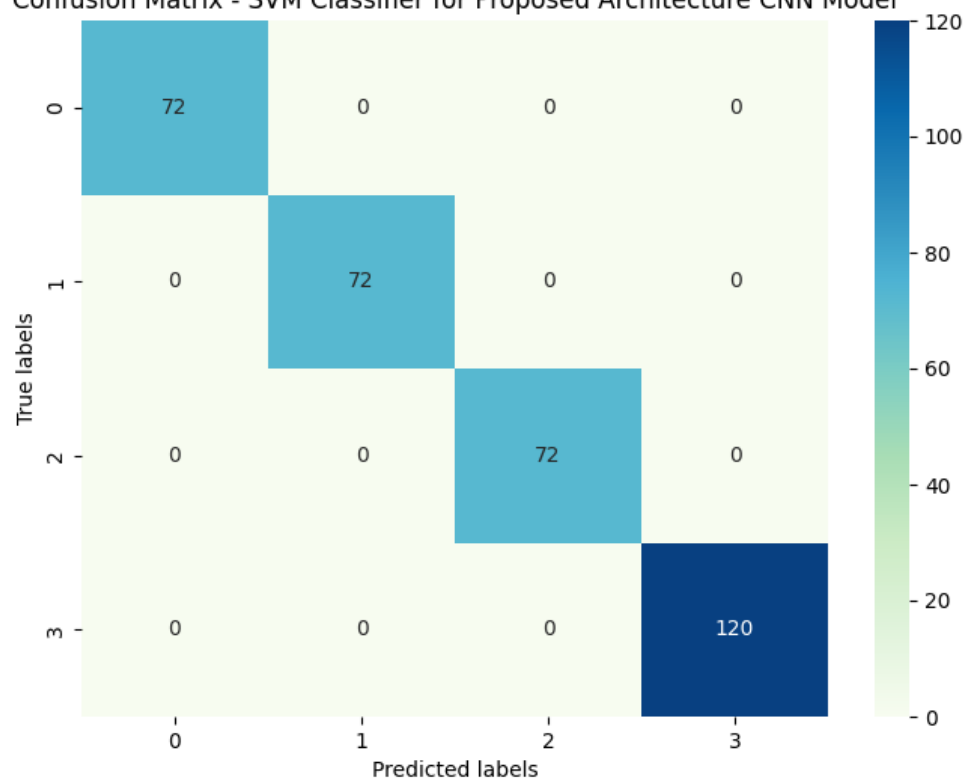
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Confusion Matrix - SVM Classifier for Proposed Architecture CNN Model



Random Forest Confusion Matrix for Proposed Architecture CNN Model

