PS C:\Users\Lu34\OneDrive\Desktop\AMLS\_assignment23\_24--main> & C:/Users/Lu34/AppData/Local/Programs/Python/Python310/python.exe c:/Users/Lu34/OneDrive/Desktop/AMLS\_assignment23\_24--main/main.py

2024-01-26 11:34:33.862800: 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\Lu34\AppData\Local\Programs\Python\Python310\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.

Accuracy Training of SVM: 85.42%

SVM Classification Report:

precision recall f1-score support

0 0.97 0.63 0.76 234

1 0.82 0.99 0.89 390

accuracy 0.85 624

macro avg 0.89 0.81 0.83 624

weighted avg 0.88 0.85 0.85 624

Accuracy Training of Random Forest: 84.78%

Random Forest Classification Report:

precision recall f1-score support

0 0.94 0.64 0.76 234

1 0.82 0.97 0.89 390

accuracy 0.85 624

macro avg 0.88 0.81 0.82 624

weighted avg 0.86 0.85 0.84 624

Accuracy Training of KNN: 82.85%

KNN Classification Report:

precision recall f1-score support

0 0.94 0.58 0.72 234

1 0.79 0.98 0.88 390

accuracy 0.83 624

macro avg 0.87 0.78 0.80 624

weighted avg 0.85 0.83 0.82 624

WARNING:tensorflow:From C:\Users\Lu34\AppData\Local\Programs\Python\Python310\lib\site-packages\keras\src\backend.py:873: The name tf.get\_default\_graph is deprecated. Please use tf.compat.v1.get\_default\_graph instead.

WARNING:tensorflow:From C:\Users\Lu34\AppData\Local\Programs\Python\Python310\lib\site-packages\keras\src\layers\pooling\max\_pooling2d.py:161: The name tf.nn.max\_pool is deprecated. Please use tf.nn.max\_pool2d instead.

2024-01-26 11:35:35.151235: 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 AVX512F AVX512\_VNNI FMA, in other operations, rebuild TensorFlow with the appropriate compiler flags.

WARNING:tensorflow:From C:\Users\Lu34\AppData\Local\Programs\Python\Python310\lib\site-packages\keras\src\optimizers\\_\_init\_\_.py:309: The name tf.train.Optimizer is deprecated. Please use tf.compat.v1.train.Optimizer instead.

Epoch 1/12

WARNING:tensorflow:From C:\Users\Lu34\AppData\Local\Programs\Python\Python310\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\Lu34\AppData\Local\Programs\Python\Python310\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.

2813/2813 [==============================] - 34s 12ms/step - loss: 1.1302 - accuracy: 0.6046 - val\_loss: 0.8856 - val\_accuracy: 0.6964

Epoch 2/12

2813/2813 [==============================] - 33s 12ms/step - loss: 0.8273 - accuracy: 0.7032 - val\_loss: 0.9332 - val\_accuracy: 0.6943

Epoch 3/12

2813/2813 [==============================] - 44s 16ms/step - loss: 0.7254 - accuracy: 0.7408 - val\_loss: 0.8364 - val\_accuracy: 0.7233

Epoch 4/12

2813/2813 [==============================] - 47s 17ms/step - loss: 0.6549 - accuracy: 0.7662 - val\_loss: 0.6765 - val\_accuracy: 0.7865

Epoch 5/12

2813/2813 [==============================] - 44s 16ms/step - loss: 0.6103 - accuracy: 0.7814 - val\_loss: 0.5669 - val\_accuracy: 0.7999

Epoch 6/12

2813/2813 [==============================] - 44s 15ms/step - loss: 0.5670 - accuracy: 0.7982 - val\_loss: 0.7285 - val\_accuracy: 0.7627

Epoch 7/12

2813/2813 [==============================] - 43s 15ms/step - loss: 0.5417 - accuracy: 0.8076 - val\_loss: 0.9427 - val\_accuracy: 0.7277

Epoch 8/12

2813/2813 [==============================] - 44s 15ms/step - loss: 0.5200 - accuracy: 0.8133 - val\_loss: 0.7351 - val\_accuracy: 0.7719

Epoch 9/12

2813/2813 [==============================] - 43s 15ms/step - loss: 0.4932 - accuracy: 0.8243 - val\_loss: 0.8197 - val\_accuracy: 0.7500

Epoch 10/12

2813/2813 [==============================] - 43s 15ms/step - loss: 0.4779 - accuracy: 0.8302 - val\_loss: 0.7467 - val\_accuracy: 0.7610

Epoch 11/12

2813/2813 [==============================] - 43s 15ms/step - loss: 0.4599 - accuracy: 0.8355 - val\_loss: 0.8347 - val\_accuracy: 0.7323

Epoch 12/12

2813/2813 [==============================] - 43s 15ms/step - loss: 0.4468 - accuracy: 0.8398 - val\_loss: 0.6512 - val\_accuracy: 0.7930

225/225 [==============================] - 2s 7ms/step - loss: 0.6512 - accuracy: 0.7930

Accuracy Training of CNN: 79.30%

225/225 [==============================] - 1s 4ms/step

A screenshot of a computer screen

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A screenshot of a computer

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