RESULTS OF AI ML TASK 23BCE2086 SHRIDHARAN VK

Choose Files dataset_aiml_task.zip

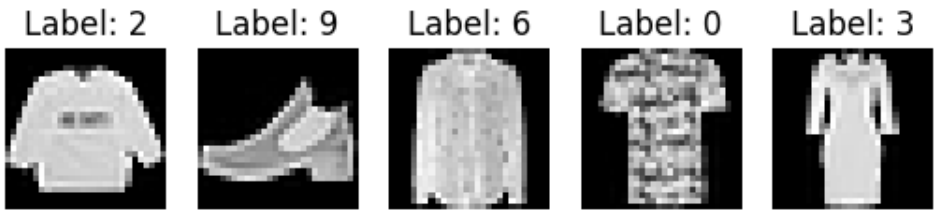
- **dataset_aiml_task.zip**(application/x-zip-compressed) - 60405735 bytes, last modified: 3/7/2025 - 100%

```
Saving dataset_aiml_task.zip to dataset_aiml_task.zip
Dataset Shape: (60000, 785)
   label  pixel1  pixel2  pixel3  pixel4  pixel5  pixel6  pixel7  pixel8  \
0      2       0       0       0       0       0       0       0       0
1      9       0       0       0       0       0       0       0       0
2      6       0       0       0       0       0       0       0       5
3      0       0       0       0       1       2       0       0       0
4      3       0       0       0       0       0       0       0       0

   pixel9  ...  pixel775  pixel776  pixel777  pixel778  pixel779  pixel780  \
0       0  ...         0         0         0         0         0         0
1       0  ...         0         0         0         0         0         0
2       0  ...         0         0         0        30        43         0
3       0  ...         3         0         0         0         0         1
4       0  ...         0         0         0         0         0         0

   pixel781  pixel782  pixel783  pixel784
0         0         0         0         0
1         0         0         0         0
2         0         0         0         0
3         0         0         0         0
4         0         0         0         0

[5 rows x 785 columns]
```



Summary Statistics:

	label	pixel1	pixel2	pixel3	pixel4
count	60000.000000	60000.000000	60000.000000	60000.000000	60000.000000
mean	4.500000	0.000900	0.006150	0.035333	0.101933
std	2.872305	0.094689	0.271011	1.222324	2.452871
min	0.000000	0.000000	0.000000	0.000000	0.000000
25%	2.000000	0.000000	0.000000	0.000000	0.000000
50%	4.500000	0.000000	0.000000	0.000000	0.000000
75%	7.000000	0.000000	0.000000	0.000000	0.000000
max	9.000000	16.000000	36.000000	226.000000	164.000000

	pixel5	pixel6	pixel7	pixel8	pixel9
count	60000.000000	60000.000000	60000.000000	60000.000000	60000.000000
mean	0.247967	0.411467	0.805767	2.198283	5.682000
std	4.306912	5.836188	8.215169	14.093378	23.819481
min	0.000000	0.000000	0.000000	0.000000	0.000000
25%	0.000000	0.000000	0.000000	0.000000	0.000000
50%	0.000000	0.000000	0.000000	0.000000	0.000000
75%	0.000000	0.000000	0.000000	0.000000	0.000000
max	227.000000	230.000000	224.000000	255.000000	254.000000

	...	pixel775	pixel776	pixel777	pixel778
count	...	60000.000000	60000.000000	60000.000000	60000.000000
mean	...	34.625400	23.300683	16.588267	17.869433
std	...	57.545242	48.854427	41.979611	43.966032
min	...	0.000000	0.000000	0.000000	0.000000
25%	...	0.000000	0.000000	0.000000	0.000000
50%	...	0.000000	0.000000	0.000000	0.000000
75%	...	58.000000	9.000000	0.000000	0.000000
max	...	255.000000	255.000000	255.000000	255.000000

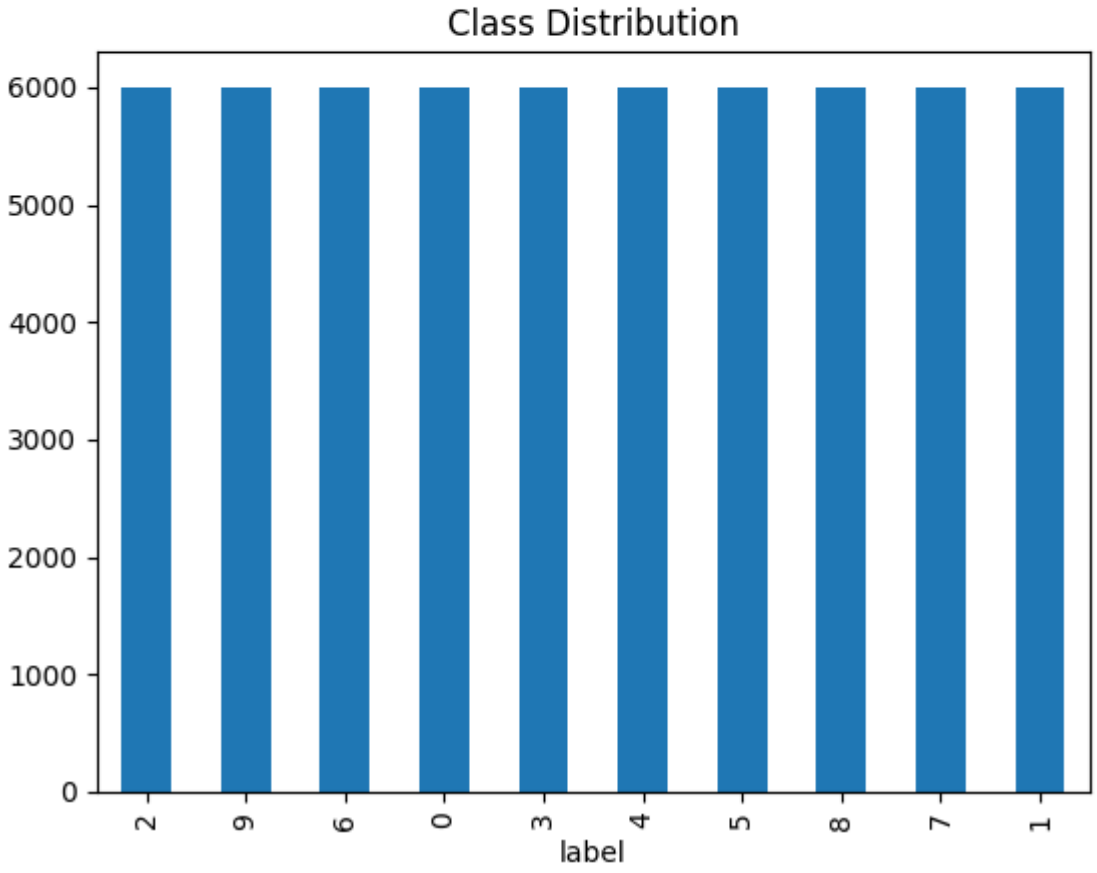
	pixel779	pixel780	pixel781	pixel782	pixel783
count	60000.000000	60000.000000	60000.000000	60000.000000	60000.000000
mean	22.814817	17.911483	8.520633	2.753300	0.855517
std	51.830477	45.149388	29.614859	17.397652	9.356960
min	0.000000	0.000000	0.000000	0.000000	0.000000
25%	0.000000	0.000000	0.000000	0.000000	0.000000
50%	0.000000	0.000000	0.000000	0.000000	0.000000
75%	0.000000	0.000000	0.000000	0.000000	0.000000
max	255.000000	255.000000	255.000000	255.000000	255.000000

	pixel784
count	60000.00000

```
min        0.000000      0.000000      0.000000      0.000000      0.000000
25%        0.000000      0.000000      0.000000      0.000000      0.000000
50%        0.000000      0.000000      0.000000      0.000000      0.000000
75%        0.000000      0.000000      0.000000      0.000000      0.000000
max      255.000000    255.000000    255.000000    255.000000    255.000000

          pixel784
count  60000.00000
mean       0.07025
std        2.12587
min        0.00000
25%        0.00000
50%        0.00000
75%        0.00000
max      170.00000

[8 rows x 785 columns]
```



```
Accuracy: 0.8505
              precision    recall  f1-score   support

           0       0.79      0.81      0.80      1232
           1       0.97      0.95      0.96      1174
           2       0.75      0.76      0.76      1200
           3       0.85      0.87      0.86      1242
           4       0.74      0.77      0.75      1185
           5       0.93      0.93      0.93      1141
           6       0.65      0.58      0.61      1243
           7       0.93      0.94      0.93      1224
           8       0.95      0.95      0.95      1149
           9       0.96      0.95      0.96      1210

    accuracy                           0.85     12000
   macro avg       0.85      0.85      0.85     12000
weighted avg       0.85      0.85      0.85     12000

/usr/local/lib/python3.11/dist-packages/keras/src/layers/core/dense.py:87: UserWarning: Do not pass an `input_shape`/`input_dim`
  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
Epoch 1/10
1500/1500 ━━━━━━━━━━━━━━━━━━━━ 8s 4ms/step - accuracy: 0.7653 - loss: 0.6792 - val_accuracy: 0.8395 - val_loss: 0.4404
Epoch 2/10
1500/1500 ━━━━━━━━━━━━━━━━━━━━ 9s 4ms/step - accuracy: 0.8596 - loss: 0.3918 - val_accuracy: 0.8665 - val_loss: 0.3604
Epoch 3/10
1500/1500 ━━━━━━━━━━━━━━━━━━━━ 11s 4ms/step - accuracy: 0.8723 - loss: 0.3489 - val_accuracy: 0.8720 - val_loss: 0.3533
Epoch 4/10
1500/1500 ━━━━━━━━━━━━━━━━━━━━ 12s 5ms/step - accuracy: 0.8788 - loss: 0.3306 - val_accuracy: 0.8716 - val_loss: 0.3402
Epoch 5/10
1500/1500 ━━━━━━━━━━━━━━━━━━━━ 10s 5ms/step - accuracy: 0.8875 - loss: 0.3043 - val_accuracy: 0.8798 - val_loss: 0.3293
Epoch 6/10
1500/1500 ━━━━━━━━━━━━━━━━━━━━ 7s 4ms/step - accuracy: 0.8925 - loss: 0.2883 - val_accuracy: 0.8767 - val_loss: 0.3452
Epoch 7/10
1500/1500 ━━━━━━━━━━━━━━━━━━━━ 10s 4ms/step - accuracy: 0.8984 - loss: 0.2745 - val_accuracy: 0.8852 - val_loss: 0.3145
Epoch 8/10
1500/1500 ━━━━━━━━━━━━━━━━━━━━ 10s 7ms/step - accuracy: 0.9011 - loss: 0.2628 - val_accuracy: 0.8819 - val_loss: 0.3239
Epoch 9/10
1500/1500 ━━━━━━━━━━━━━━━━━━━━ 7s 4ms/step - accuracy: 0.9056 - loss: 0.2478 - val_accuracy: 0.8824 - val_loss: 0.3203
Epoch 10/10
1500/1500 ━━━━━━━━━━━━━━━━━━━━ 11s 4ms/step - accuracy: 0.9109 - loss: 0.2377 - val_accuracy: 0.8712 - val_loss: 0.3509
375/375 ━━━━━━━━━━━━━━━━━━━━ 1s 3ms/step - accuracy: 0.8709 - loss: 0.3507
Test Accuracy: 0.8711666464805603
```