MLP

300-200-100-2

sets of experiments1 SGD(lr=0.0001, decay=1e-6, momentum=0.9, nesterov=True)

epochs=100, batch\_size=20 train\_time:398.31762194633484 test\_time:0.35704517364501953 Test loss:0.19559000805020332 Test accuracy:0.949999988079071

Precise: 0.9690721649484536,0.9320388349514563,

Recall: 0.9306930693069307,0.9696969696969697,

F1 Score: 0.9494949494949494,0.9504950495049503,

NotMap406.jpg,0,1

NotMap268.jpg,0,1

us\_map184.jpg,1,0

china\_map184.jpg,1,0

NotMap264.jpg,0,1

NotMap261.jpg,0,1

NotMap129.jpg,0,1

NotMap299.jpg,0,1

NotMap147.jpg,0,1

south\_korea\_map188.jpg,1,0

SVM (to be updated from polynomial kernel)

train size:800 test size:200sets of experiments0

train size:800 test size:200

Polynomial kernel: value of c is: 0.0625 value of alpha is: 0.0625 value of r is: 256 Training acc:100.0 Testing acc:91.0

Precise: 0.9166666666666666,0.9021739130434783,

Recall: 0.9166666666666666,0.9021739130434783,

F1 Score:0.9166666666666665,0.9021739130434783,

train\_time:13.605052947998047 test\_time:11.068845510482788

NotMap300.jpg,0,1.0

NotMap235.jpg,0,1.0

china\_map111.jpg,1,0.0

us\_map117.jpg,1,0.0

south\_korea\_map173.jpg,1,0.0

NotMap287.jpg,0,1.0

NotMap174.jpg,0,1.0

china\_map144.jpg,1,0.0

NotMap278.jpg,0,1.0

NotMap333.jpg,0,1.0

1644 blaeu.jpg,1,0.0

south\_korea\_map152.jpg,1,0.0

960x0.jpg,1,0.0

NotMap233.jpg,0,1.0

NotMap483.jpg,0,1.0

NotMap261.jpg,0,1.0

us\_map150.jpg,1,0.0

south\_korea\_map107.jpg,1,0.0

CNN (from scratch)

16-32

Sets of experiments1 optimizer=keras.optimizers.SGD(lr=0.01) epochs=100, batch\_size=20 train\_time:604.9111607074738 test\_time:0.29916930198669434 Test loss:0.24131534218788148 Test accuracy:0.9549999833106995

Precise: 0.9690721649484536,0.941747572815534,

Recall: 0.94,0.97,

F1 Score: 0.9543147208121827,0.9556650246305418,

1644 blaeu.jpg,1,0

NotMap274.jpg,0,1

NotMap240.jpg,0,1

NotMap268.jpg,0,1

china\_map111.jpg,1,0

south\_korea\_map143.jpg,1,0

NotMap297.jpg,0,1

NotMap276.jpg,0,1

NotMap238.jpg,0,1

Transfer Learning (VGG16)

Precise: 0.9813084112149533,0.989247311827957, Recall: 0.9905660377358491,0.9787234042553191, F1 Score: 0.9859154929577465,0.983957219251337,layer\_inx: -3

Batch\_size: 32 epochs: 30

[INFO] loss=0.1670, accuracy: 98.5000%

Training time: 294.8104064464569

south\_korea\_map151.jpg,1,0

south\_korea\_map171.jpg,1,0

NotMap268.jpg,0,1

|  |  |  |
| --- | --- | --- |
| **Image** | **Desired Label** | **Desired Label** |
|  | **1** | **0** |
|  | 1 | 0 |
|  | 0 | 1 |
|  | 4 | 2 |
|  | 3 | 0 |
|  | 0 | 4 |
|  | 2 | 0 |
|  | 2 | 0 |
|  | 0 | 1 |
|  | 0 | 1 |
|  | 0 | 1 |
|  | 0 | 1 |
|  | 0 | 4 |
|  | 4 | 0 |
|  | 3 | 0 |