->과제목표

assignment3에서 개미와 벌 에 관해서 pretrained된 resnet 18과 Strategt 1,3 로 학습시키고, 나만의 네트워크와 차이를 비교해보는 것이 목표입니다.

->구현방법

```
model_ft = models.resnet18(pretrained=True)
num_ftrs = model_ft.fc.in_features

model_ft.fc = nn.Linear(num_ftrs, 2)

model_ft = model_ft.to(device)

criterion = nn.CrossEntropyLoss()

optimizer_ft = optim.SGD(model_ft.parameters(), lr=0.001, momentum=0.9)

exp_lr_scheduler = lr_scheduler.StepLR(optimizer_ft, step_size=7, gamma=0.1)

model_ft = train_model(model_ft, criterion, optimizer_ft, exp_lr_scheduler, num_epochs=10)
```

stategyl을 보면 conv 와 classtiar 부분 전부 resnet으로 training 할 것이기 때문에 어느 부분도 freeze 하지 않습니다.

1 3

```
train Loss: 0.5418 Acc: 0.7254
val Loss: 0.1730 Acc: 0.9477
train Loss: 0.3345 Acc: 0.8402
val Loss: 0.2105 Acc: 0.9281
Epoch 2/9
val Loss: 0.2764 Acc: 0.8824
Epoch 3/9
train Loss: 0.4317 Acc: 0.8361
val Loss: 0.2131 Acc: 0.9020
Epoch 4/9
train Loss: 0.6276 Acc: 0.7910
val Loss: 0.3824 Acc: 0.9020
Epoch 5/9
train Loss: 0.4889 Acc: 0.8361
val Loss: 0.2918 Acc: 0.8954
train Loss: 0.4775 Acc: 0.8320
val Loss: 0.3779 Acc: 0.8758
train Loss: 0.4032 Acc: 0.8811
val Loss: 0.3027 Acc: 0.8889
Epoch 8/9
train Loss: 0.4619 Acc: 0.8033
val Loss: 0.3072 Acc: 0.9085
train Loss: 0.2973 Acc: 0.8770
val Loss: 0.3113 Acc: 0.8954
Training complete in 4m 56s
```

```
Epoch 0/9
train Loss: 0.7299 Acc: 0.6107
val Loss: 0.1895 Acc: 0.9542
Epoch 1/9
train Loss: 0.5013 Acc: 0.7623
val Loss: 0.2041 Acc: 0.9346
Epoch 2/9
train Loss: 0.4500 Acc: 0.8197
val Loss: 0.2058 Acc: 0.9281
Epoch 3/9
train Loss: 0.6378 Acc: 0.7254
val Loss: 0.2055 Acc: 0.9477
Epoch 4/9
train Loss: 0.4060 Acc: 0.8320
val Loss: 0.2048 Acc: 0.9477
Epoch 5/9
train Loss: 0.5136 Acc: 0.8033
val Loss: 0.2462 Acc: 0.9216
Epoch 6/9
train Loss: 0.5768 Acc: 0.7869
val Loss: 0.2091 Acc: 0.9216
Epoch 7/9
train Loss: 0.3785 Acc: 0.8279
val Loss: 0.1843 Acc: 0.9542
train Loss: 0.3181 Acc: 0.8525
val Loss: 0.1975 Acc: 0.9542
Epoch 9/9
train Loss: 0.2815 Acc: 0.8443
val Loss: 0.1796 Acc: 0.9542
Training complete in 2m 20s
Best val Acc: 0.954248
```

epoch	본인네트 워크		stategy1		strategy3	
	vall loss	Acc	val loss	Acc	vall loss	Acc
1	0.1915	0.9020	0.1730	0.9477	0.1895	0.9542
2	0.3040	0.8693	0.2105	0.9281	0.2041	0.9346
3	0.4916	0.7974	0.2764	0.8824	0.2058	0.9281
4	0.1585	0.9412	0.2131	0.9020	0.2055	0.9477
5	0.2690	0.9216	0.3824	0.9020	0.2048	0.9477
6	0.3987	0.8497	0.2918	0.8954	0.2462	0.9216
7	0.2171	0.9477	0.3779	0.8758	0.2091	0.9216
8	0.2183	0.9281	0.3027	0.8889	0.1843	0.9542
9	0.2230	0.9346	0.3072	0.9085	0.1975	0.9542
10	0.2124	0.9412	0.3113	0.8954	0.1796	0.9542

strategy3이 정확도가 높게 나오는 것을 볼 수 있습니다.