

Exercise_3_assessment_data_science

January 29, 2023

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[4]: import numpy as np

def dotproduct1d(u,v):
    A=np.zeros((len(u),len(v)))
    for i in range(0,len(u)):
        for j in range(0,len(v)):
            A[i,j]=u[i]*v[j]
    return A

A=np.array([[1,2,-1],[1,2,-3]])
U,S,Vt=np.linalg.svd(A)

pinv=np.zeros((len(A[0,:]),len(A[:,0])))
for i in range(0,len(S),1):
    pinv = pinv + 1/S[i]*dotproduct1d(Vt[i,:],U[:,i])
print(pinv)
print(np.linalg.pinv(A))#comparing my pinv with linalg.pinv
```

```
[[ 0.3 -0.1]
 [ 0.6 -0.2]
 [ 0.5 -0.5]]
[[ 0.3 -0.1]
 [ 0.6 -0.2]
 [ 0.5 -0.5]]
```