

Live 2025-10-29

October 29, 2025

## 1 PCA Live 2025-10-29

```
[1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

```
[2]: X = sns.load_dataset('iris')
y = X.species
X = X.drop('species',axis=1)
```

```
[3]: X.head()
```

```
[3]:   sepal_length  sepal_width  petal_length  petal_width
0           5.1           3.5           1.4           0.2
1           4.9           3.0           1.4           0.2
2           4.7           3.2           1.3           0.2
3           4.6           3.1           1.5           0.2
4           5.0           3.6           1.4           0.2
```

```
[6]: from sklearn import decomposition

myPca = decomposition.PCA(2)
```

```
[7]: myPca.fit(X)
```

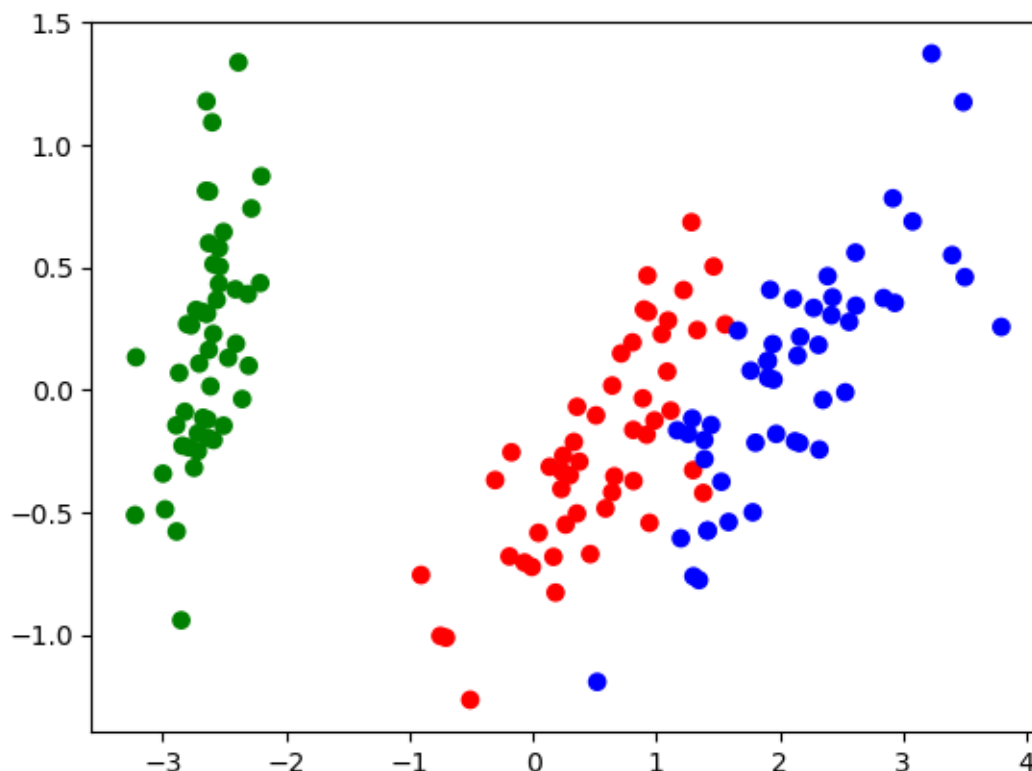
```
[7]: PCA(n_components=2)
```

```
[8]: X_pca = myPca.transform(X)
```

```
[15]: colors = {'setosa' : 'green', 'versicolor' : 'red', 'virginica' : 'blue'}

plt.scatter(X_pca[:,0],X_pca[:,1],c=y.map(colors))
```

```
[15]: <matplotlib.collections.PathCollection at 0x7f0dc346c5b0>
```



```
[14]: X_pca[:,0]
```

```
[14]: array([-2.68412563, -2.71414169, -2.88899057, -2.74534286, -2.72871654,
-2.28085963, -2.82053775, -2.62614497, -2.88638273, -2.67275558 ,
-2.50694709, -2.61275523, -2.78610927, -3.22380374, -2.64475039,
-2.38603903, -2.62352788, -2.64829671, -2.19982032, -2.5879864 ,
-2.31025622, -2.54370523, -3.21593942, -2.30273318, -2.35575405,
-2.50666891, -2.46882007, -2.56231991, -2.63953472, -2.63198939,
-2.58739848, -2.4099325 , -2.64886233, -2.59873675, -2.63692688,
-2.86624165, -2.62523805, -2.80068412, -2.98050204, -2.59000631,
-2.77010243, -2.84936871, -2.99740655, -2.40561449, -2.20948924,
-2.71445143, -2.53814826, -2.83946217, -2.54308575, -2.70335978,
 1.28482569,  0.93248853,  1.46430232,  0.18331772,  1.08810326,
 0.64166908,  1.09506066, -0.74912267,  1.04413183, -0.0087454 ,
-0.50784088,  0.51169856,  0.26497651,  0.98493451, -0.17392537,
 0.92786078,  0.66028376,  0.23610499,  0.94473373,  0.04522698,
 1.11628318,  0.35788842,  1.29818388,  0.92172892,  0.71485333,
 0.90017437,  1.33202444,  1.55780216,  0.81329065, -0.30558378,
-0.06812649, -0.18962247,  0.13642871,  1.38002644,  0.58800644,
 0.80685831,  1.22069088,  0.81509524,  0.24595768,  0.16641322,
 0.46480029,  0.8908152 ,  0.23054802, -0.70453176,  0.35698149,
 0.33193448,  0.37621565,  0.64257601, -0.90646986,  0.29900084,
```

```
2.53119273, 1.41523588, 2.61667602, 1.97153105, 2.35000592,  
3.39703874, 0.52123224, 2.93258707, 2.32122882, 2.91675097,  
1.66177415, 1.80340195, 2.1655918 , 1.34616358, 1.58592822,  
1.90445637, 1.94968906, 3.48705536, 3.79564542, 1.30079171,  
2.42781791, 1.19900111, 3.49992004, 1.38876613, 2.2754305 ,  
2.61409047, 1.25850816, 1.29113206, 2.12360872, 2.38800302,  
2.84167278, 3.23067366, 2.15943764, 1.44416124, 1.78129481,  
3.07649993, 2.14424331, 1.90509815, 1.16932634, 2.10761114,  
2.31415471, 1.9222678 , 1.41523588, 2.56301338, 2.41874618,  
1.94410979, 1.52716661, 1.76434572, 1.90094161, 1.39018886])
```

[ ]: