# 02.03 API IrisPCA

October 30, 2020

# 1 Estimator API: Dimensionsreduktion der Iris Daten (unsupervised)

Video

```
[2]: %matplotlib inline import seaborn as sns; sns.set()
```

Die Iris Daten sind vierdimensional und damit schwer zu visualisieren. Können diese auf zwei (wesentliche) Dimensionen reduziert werden? Verwende Principal Component Analysis (PCA): Wir verwenden hier nur die vierdimensionalen Daten, die Labels werden NICHT verwendet.

#### 1.1 1. Wähle Modellklasse

```
[1]: from sklearn.decomposition import PCA
```

## 1.2 2. Wähle Modellparameter

```
[3]: PCA?
```

```
[4]: model = PCA(n_components=2)
```

#### 1.3 3. Bereite Daten vor

```
[5]: iris = sns.load_dataset('iris')
X_iris = iris.drop('species', axis=1)
y_iris = iris['species']
```

#### 1.4 4. Passe das Modell an die Daten an

```
[6]: model.fit(X_iris)
```

#### 1.5 5. Wende das Modell auf neue Daten an

In disesem *unsupervised* Fall heißt das: Transformiere die Daten auf die neu gelernten wichtigen Dimensionen.

```
[7]: X_2D = model.transform(X_iris)
X_2D
```

```
[7]: array([[-2.68412563, 0.31939725],
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            [-2.88899057, -0.14494943],
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                           0.01472994],
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            [-2.5879864]
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                           0.41092426],
            [-2.64886233,
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            [-2.59873675,
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            [-2.62523805,
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            [-2.59000631,
                           0.22904384],
```

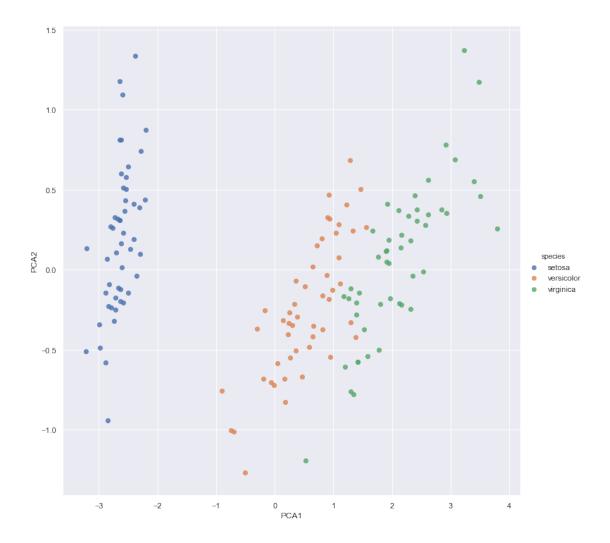
```
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```

```
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[ 2.32122882, -0.2438315 ],
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```

```
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[ 1.90094161, 0.11662796],
[ 1.39018886, -0.28266094]])
```

## Visulisiere das Ergebnis:

```
[8]: iris['PCA1'] = X_2D[:, 0]
iris['PCA2'] = X_2D[:, 1]
sns.lmplot("PCA1", "PCA2", hue='species', data=iris, fit_reg=False, height=10);
```



Sieht aus, als ob sich diese Daten gut clustern lassen...

[]: