```
Chapter 5 - Dimensionality Reduction Methods

Part 1 - Explanatory factor analysis
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In [1]:
```
import pandas as pd
import numpy as np

import sklearn
from sklearn.decomposition import FactorAnalysis

from sklearn import datasets
```

```
Factor analysis on iris dataset
```

In [3]:
```
iris = datasets.load_iris()

X = iris.data
variable_names = iris.feature_names

X[0:10,]
```

Out[3]:
```
array([[5.1, 3.5, 1.4, 0.2],
       [4.9, 3. , 1.4, 0.2],
       [4.7, 3.2, 1.3, 0.2],
       [4.6, 3.1, 1.5, 0.2],
       [5. , 3.6, 1.4, 0.2],
       [5.4, 3.9, 1.7, 0.4],
       [4.6, 3.4, 1.4, 0.3],
       [5. , 3.4, 1.5, 0.2],
       [4.4, 2.9, 1.4, 0.2],
       [4.9, 3.1, 1.5, 0.1]])
```

In [4]:
```
factor = FactorAnalysis().fit(X)

DF = pd.DataFrame(factor.components_, columns=variable_names)
print(DF)
```

```
   sepal length (cm)  sepal width (cm)  petal length (cm)  petal width (cm)
0           0.706989         -0.158005           1.654236           0.70085
1           0.115161          0.159635          -0.044321          -0.01403
2          -0.000000          0.000000           0.000000           0.00000
3          -0.000000          0.000000           0.000000          -0.00000
```