Coursework 1

Replace CID in the file name with your CID

CID: 02216531

Outline

- Task 1: Multi-class classification with Decision Trees and Random Forests
  - (1.1)
  - (1.2)
  - (1.3)
  - (1.4)
- Task 2: Binary classification with the Huberised Support Vector Machine
  - (2.1)
  - (2.2)
- Task 3: Regression with the Multi-Layer Perceptron
  - (3.1)
  - (3.2)

Task 1: Multi-class classification with Decision Trees and Random Forests (index)

Let us first import all necessary libraries and create a random generator with a fixed seed 0 as required.

In [1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
rng = np.random.default_rng(0)
```
Then we import the training set and the test set, and we preview both of the datasets to familiarise its structure.

In [2]:
```
data_train = pd.read_csv("airfield_statistics_train.csv")
data_test = pd.read_csv("airfield_statistics_test.csv")
```
In [3]:
```
data_train.head()
```
Out[3]:

	Days of airfrost	Precipitation	Sunshine hours	Humidity (%)	Wind Speed	Aircraft total movements	Weather and flight condition category	Runway surface minimal temperature	Ru s m temp
0	24	59.9	58.5	79.3	5.1	1347	3	-2.6	
1	0	66.7	158.3	61.0	3.5	1306	1	11.5	
2	0	39.5	194.6	57.9	3.2	1284	0	8.6	
3	0	34.0	192.8	60.2	2.6	1270	1	12.2	
4	8	17.7	50.3	79.7	2.9	1319	3	2.3	

In [4]:
```
data_test.head()
```