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### Coursework 1

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#### Outline

- Task 1: Multi-class classification with Decision Trees and Random Forests
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  - (1.2)
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  - (1.4)
- Task 2: Binary classification with the Huberised Support Vector Machine
  - (2.1)
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- 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	Ri si m tempe
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()
```