

# Lab2: Classification with SVM

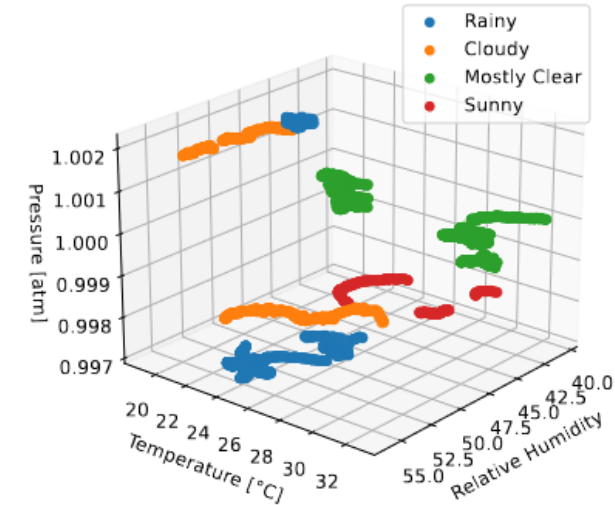
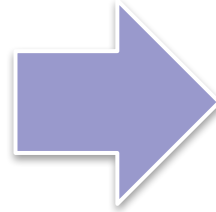
Machine Learning 2023-24  
ICT and Physics of Data

# Smart Glasses



- The provided dataset contains data recorded using the new **Luxottica I-SEE glasses** in exterior conditions
- These devices provide **multiple sensors mounted inside the glasses**, which can be accessed through a Bluetooth connection
- The recorded data include **humidity, pressure, temperature** and many other sensors
- We will also add noise to make the task more challenging, try to see what happens with different levels of noise

# Classification



Each training sample contains 3 features acquired with the I-SEE glasses

1. *Humidity*
2. *Temperature*
3. *Atmospheric Pressure*

**Task:** classify data into 4 classes, sunny, mostly clear, cloudy, rainy

4. Load the data file, divide into train and test sets
5. Perform Classification with SVM
6. Compare with Logistic Regression

ID	Label
0	Sunny
1	Rainy
2	Cloudy
3	Mostly Clear

# LAB2: Classification of Weather Conditions

- Classify weather conditions
- Use Support Vector Machines (SVM)
- Try different Kernels and parameters
- Estimate parameters with cross validation
- Visualize the results with confusion matrices
- Compare with logistic regression



# Your Task

- ❑ Complete the jupyter notebook
  - FIRST THING TO DO: you need to put your name and ID number in the notebook
  - You can use the ID also as seed for random number generators, try different seeds
  - The notebook has **missing code**: need to fill in what is missing
  - You must write the **answer to all the questions** in the notebook
  - But do not change the structure or the input data files, they will not be submitted
- ❑ Check that the notebook run properly from the beginning with the provided data
  - **use the "restart kernel&run all" command**
- ❑ Save them as **surname\_name\_lab2.ipynb**
- ❑ Submit on elearning



# Timeline

- ❑ Tue 14/11: Homework released
- ❑ Fri 17/11: Lab 1 (rooms Te+Ue)
  - Recall to subscribe to one of the attendance lists
- ❑ Tue 28/11: Delivery deadline
- ❑ The outcome is an on-off mark (i.e., +1 for the exam mark if the homework is reasonably done)