



Lab2: Classification with SVM

Machine Learning 2022

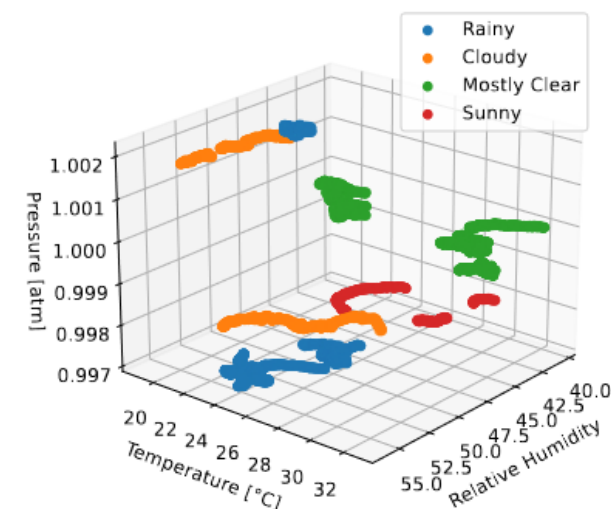
(P. Zanuttigh – ICT and Physics of Data)

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

1. Load the data file, divide into train and test sets
2. Perform Classification with SVM
3. Compare with Logistic Regression

<i>ID</i>	<i>Label</i>
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

- ❑ Fri 18/11: Homework released
- ❑ Fri 25/11: Lab 1 (rooms Te+Ue)
 - Recall to subscribe to one of the attendance lists
- ❑ Fri 2/12: Delivery deadline
- ❑ The outcome is an on-off mark (i.e., +1 for the exam mark if the homework is reasonably done)