



UNIVERSITÀ DEGLI STUDI DI MILANO
DIPARTIMENTO DI INFORMATICA

Project for the Matlab part
of the IAM Course



Classification of your personal music collection under noisy conditions

- a. Collect 18 of your favorite songs belonging to **three** different music genres/artists, for example *pop*, *rock*, and *jazz* (equally distributed, i.e. 6 songs/class).
- b. Divide the data into **train** and **test** sets as follows:
 - a. *Train set*: 3 songs of each class
 - b. *Test set*: the remaining 3 songs
- c. Extract the **Chromagrams** and the **MFCCs** from all the files.
- d. Train a **k-NN** using the train data to **classify** the test set using the **feature sets independently** and **altogether**. Optimize k to and **discover** the optimum feature set (Chromagrams, MFCCs, Chromagrams+ MFCCs).
- e. Train a **DT** using the train data to **classify** the test set using the **feature sets independently** and **altogether** to **discover** the optimum feature set (Chromagrams, MFCCs, Chromagrams+ MFCCs).
- f. Add **noise** (babble.wav) with SNR=5dB to the **test set** and measure the **performance** of k -NN and DT on the **noisy** data.
- g. Analyze the results and provide the **confusion matrix** for each feature set and classifier. Send at stavros.ntalampiras@unimi.it a brief report (4-5 pages) and code. Use subject [MatlabIAMProject] Surname, Name.

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If you want to use a standardized music dataset, here are two of the most popular ones:

- GTZAN Dataset <https://www.kaggle.com/datasets/andradaolteanu/gtzan-dataset-music-genre-classification>
- FMA: A Dataset For Music Analysis <https://github.com/mdeff/fma>

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