UNIVERSITÀ DEGLI STUDI DI MILANO
DIPARTIMENTO DI INFORMATICA

Project for the Matlab part of the IAM Lab

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.

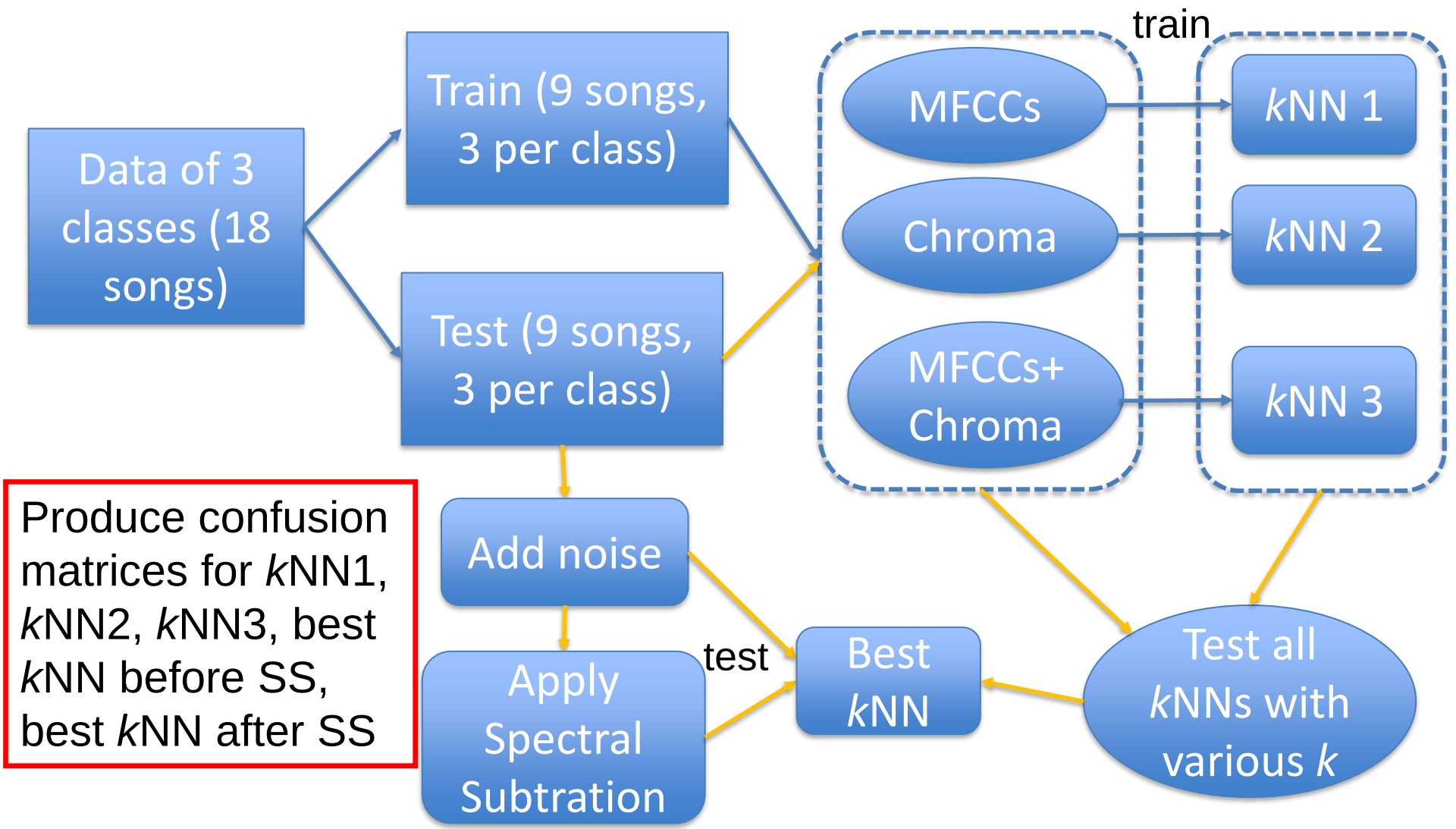
d. Train a *k*NN using the train data to **classify** the test set using the **feature sets independently** and **altogether**. Use different values for *k* to **discover** the optimum one for each combination (Chromagrams, MFCCs, Chromagrams+ MFCCs).

e. Add **noise** (babble.wav) with SNR=5dB to the test set and use the best *k*NN to classify it **before** and **after** applying **spectral subtraction**.

f. Analyze the results and provide the **confusion matrix** for each feature set (chromagram, MFCCs, combination for clean, noisy, and enhanced files).

g. Send at stavros.ntalampiras@unimi.it a brief report (3-4 pages) and code. Use subject [MatlabIAMProject] Surname, Name.

Project workflow



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If you want to use a standardized dataset of music, 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