Assignment 2 : Readme

In this file you can find:

1. Description of project
2. Instructions on how to execute the code
3. Explanation on the code flow.

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Libraries and tools used

- Essentia standard
- Google colab
- Overleaf
- Visual Studio Code

Project's file structure

The project can be found on Google Drive here. Access to the link gives view privileges.

```
.                          // Main folder + notebook + helper .py files
├── Original               // Here are the sound files
├── plots                  // Here you can find plots about instant descriptors and waveforms
└── statistics             // All statistics extracted
    ├── plots              // 2D plots for task3
    │   ├── instrument     // classification on instruments
    │   ├── name group     // classification on type of instruments
    │   ├── percussion     // classification on percussion
    │   ├── pitch          // classification on pitch
    │   └── sustained      // classification on sustainability
    ├── statistics         // json files of statistics
    └── csv                // csv files of statistics
```

Report

Tou can find the file **SMUL_REPORT.pdf** in the main folder.

To write the report we used Overleaf as our main tool.

How to execute code

The python notebook can run on any computer with below prerequisites:

- python3.5

- essentia library

  > pip3 install essentia

- a folder with soundfiles

Editing paths

First thing you should do is fix your paths on one fuction *get_paths()*. Use your desired paths

```
def get_paths():
    # fix path to match with the location of sound files
    sound_path = "/content/drive/My Drive/FEUP - Multimedia/Original/"

    # fix path to match with the location you want to save the plots
    plots_path = "/content/drive/My Drive/FEUP - Multimedia/plots/"

    # fix extension to match with the type of sound file
    file_type_extension = '.wav'

    # fix statistics to match with the type of sound file
    statistics = "/content/drive/My Drive/FEUP - Multimedia/statistics/"

    return (sound_path, plots_path, statistics, file_type_extension)
```

After inserting your paths, code until Task 2 should run properly, with no errors.

Generating plots

In the cell under **Assignment 2 / Task 2 / Generate Plots** you find the code below:

```
# COMMENT LINE BELOW ONLY IF YOU DONT WANT TO REGENERATE PLOT FILES
create_and_save_plots(final_list, save = True)
```

As the comment states, if you **don't** want to (re)generate the files comment this line.

Be careful since around 600 plots are generated and this might create issues with RAM.

Statistics handling (Task 3)

At one point we generate a *.json* file with the desired extracted statistics. With the help of PHP we convert this file to *.csv*. You can find in the the **SMUL.php** inside the *.zip*.

For the sake of faster handling and avoiding errors, **excelfile.csv** which is the converted *.json* comes also in the *.zip*. This *.csv* file should be placed in the same folder as the *.ipynb*.

Predictions (Task 5)

Results for predictions are calculated in the last 3 cells of the *.ipynb*. Same functions are used, but different lines and data.