

# Statistical Learning Project

1st Milestone

*Group 19*

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## Research Title

*Guessing it in a few seconds*

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## Abstract

*The goal of the following project is to classify music genres using a neural network.*

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## Main research aim & framework

*In order to reach our goal we would like to use machine learning techniques that we are studying applying it in a field of common interest (the music). The idea came up taking the cue from known app that identify songs. Finally, as an extension of the project, we are going to try to compare our outcomes with others obtained with a clustering algorithm.*

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## Data source(s)

*According to our purpose, the data can be collected equally with other software or apps. We will use the two sensors for the sound (pitch and sound intensity) and the one for the light (brightness). For collecting data with the last sensor we will use an external app downloaded on another device that will simulate a stroboscopio, because we think that this will help in our prediction since the light change following the rhythm of the music.*

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## Data collection

*Our idea in order to collect the data is to reproduce some song recording them inside a quiet and not so bright room so we could obtain an higher accuracy. We expect to have a dataset of few hundreds of mb.*

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## Model & Methods

Given our knowledge we expect to use the *spectrogram* from which we detect most of our feature, some clustering techniques and *CNN* (convolutional neural network).

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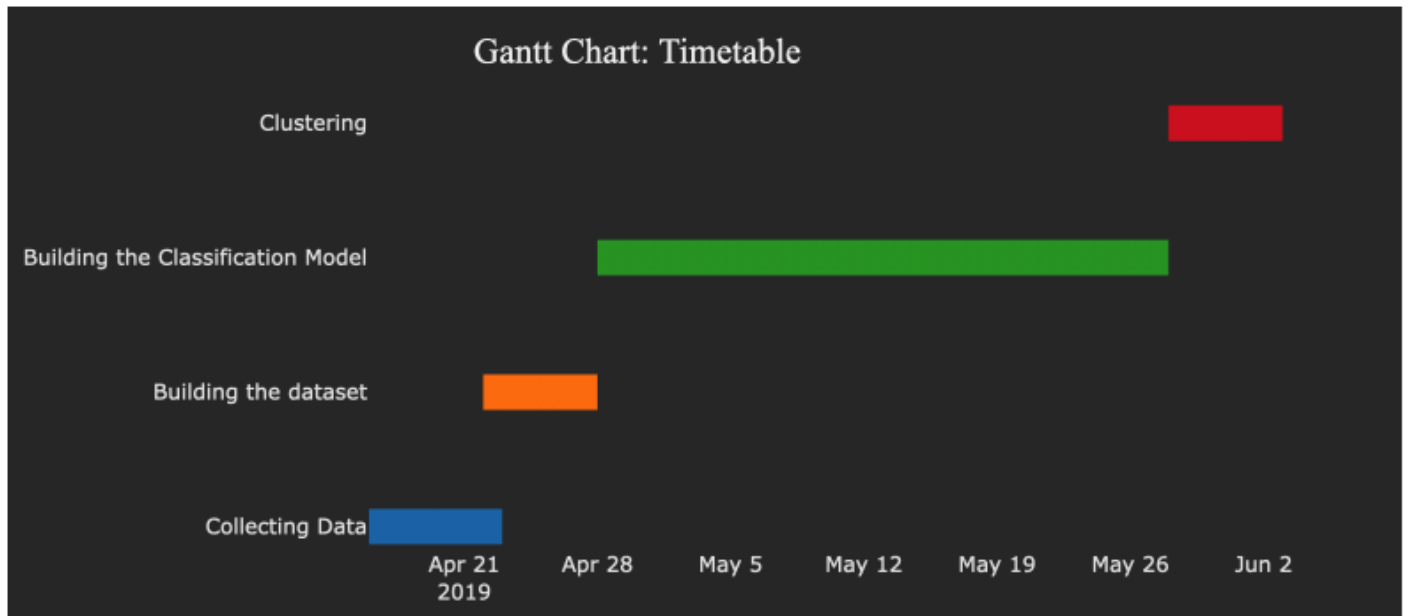
## Software/Hardware Toolkit

For our task we are going to write our codes in Python, using several libraries and packages as *Pandas*, *Scikit-Learn*, *Numpy*, *LibROSA*, *Keras* and others.

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## Project Timeline

Hoping that everything will go as we expect, the following chart shows our plans:



## References

- [Automatic music classification and the importance of instrument identification](#)
  - [Exploring Pitch with the Science Journal App](#)
  - [Music Genre Classification using Machine Learning Techniques](#)
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