Musical Notes Recognition

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1. **Our idea**

Our idea is to help musicians tune their instruments much easier through our application. So, in case of tuning a guitar, you just need a microphone to record the sound of every string. The app will tell you how close you are from the real note

1. **What we used**

We used librosa python library.

First, we record the sound using sounddevice library and store it as a wav file. Then using load method from librosa library we get the audio file as a floating point time series. Using method effects.hpss(audio\_time\_series) we decompose the audio time series into harmonic and percussive components

1. **Chromagrams**

In music, the term chromagram closely relates to the twelve different pitch classes. Chromagrams, also referred to as "pitch class profiles", are a powerful tool for analyzing music whose pitches can be meaningfully categorized

One main property of chroma features is that they capture harmonic and melodic characteristics of music, while being robust to changes in timbre and instrumentation.

A picture containing train, microwave

Description automatically generated

Chromagram for E note

A close up of a logo

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Chromagram for A note

A close up of a logo

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Chromagram for B note

A close up of a logo

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Chromagram for G note

1. **References**

For generating sounds with a given frequency https://www.szynalski.com/tone-generator/

For generating musical notes https://tuner-online.com/by-ear/

Librosa library documentation <https://librosa.github.io/librosa/>

1. **GitHub Repository**

<https://github.com/ValentinCerneanu/Musical-Notes-Recognition>