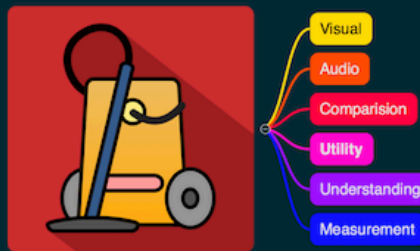


# VACUUM



VISUAL AUDIO COMPARISON UTILITY [FOR] UNDERSTANDING [AND] MEASUREMENT

A testing and analysis workflow

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# Imports

```
Librosa  
IPython  
Numpy  
Scipy  
Matplotlib
```

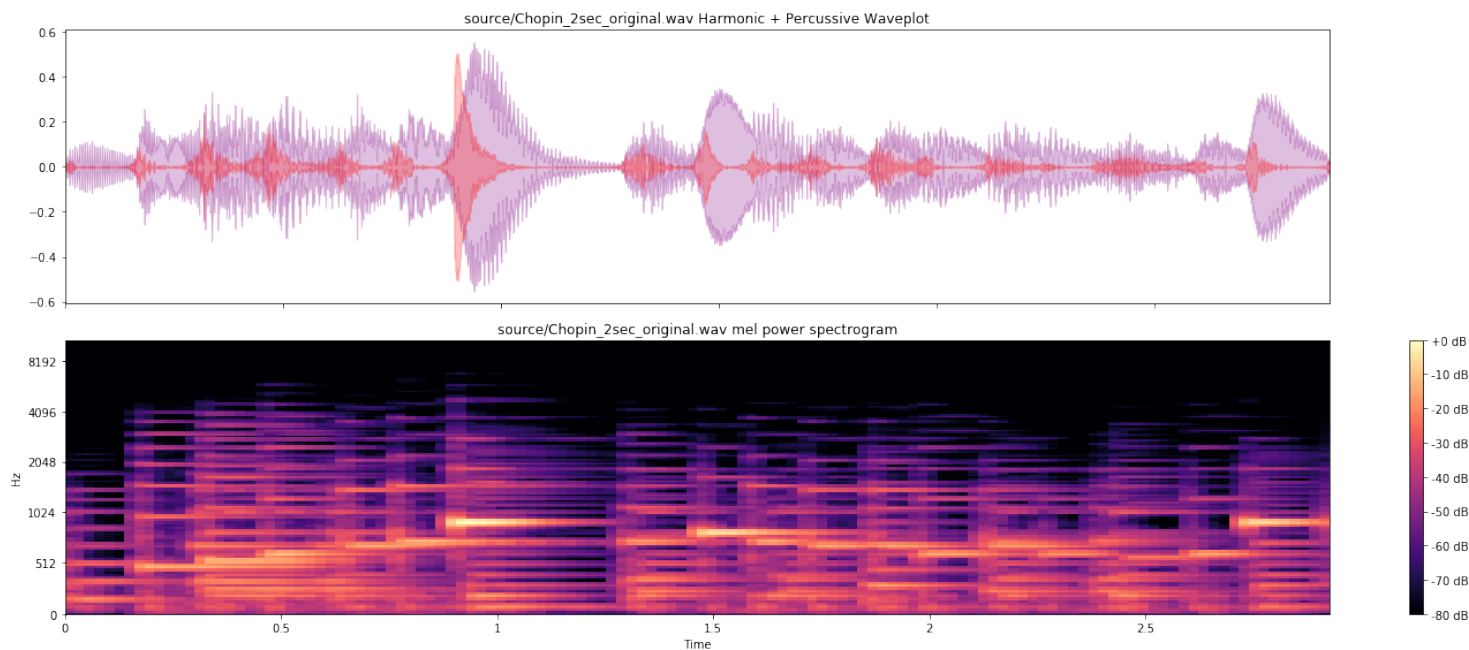
## Let's bring the files in

### Source1 Track ( Chopin\_2sec\_original.wav )

Open Source1, get some basic statistics and create a player

```
File: source/Chopin_2sec_original.wav  
Duration: 2.9039 sec  
Tuning estimate: 0.0200000000000000018
```

Let's take a first look at the file

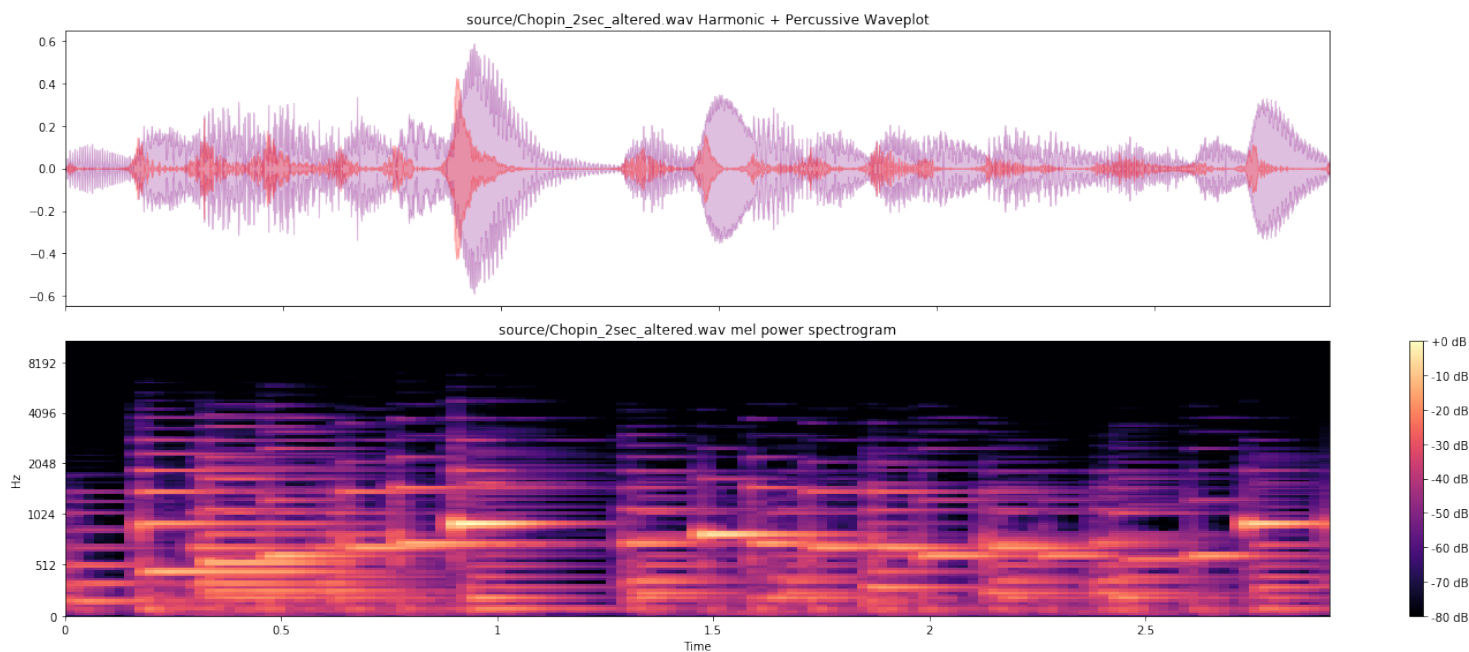


## Source 2 Track ( `source/Chopin_2sec_altered.wav` )

Open Source2, get some basic statistics and create a player

```
File: source/Chopin_2sec_altered.wav
Duration: 2.9039 sec
Tuning estimate: 0.0200000000000000018
```

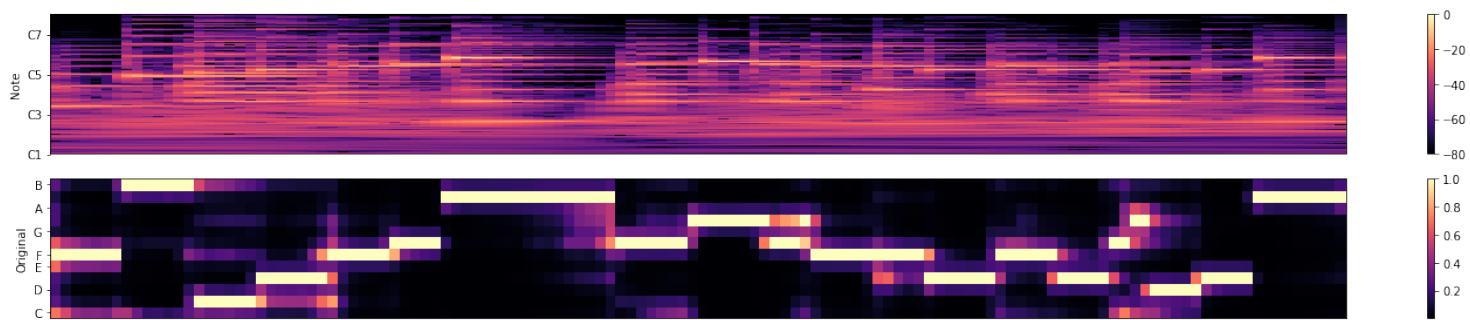
Let's take a first look at the file



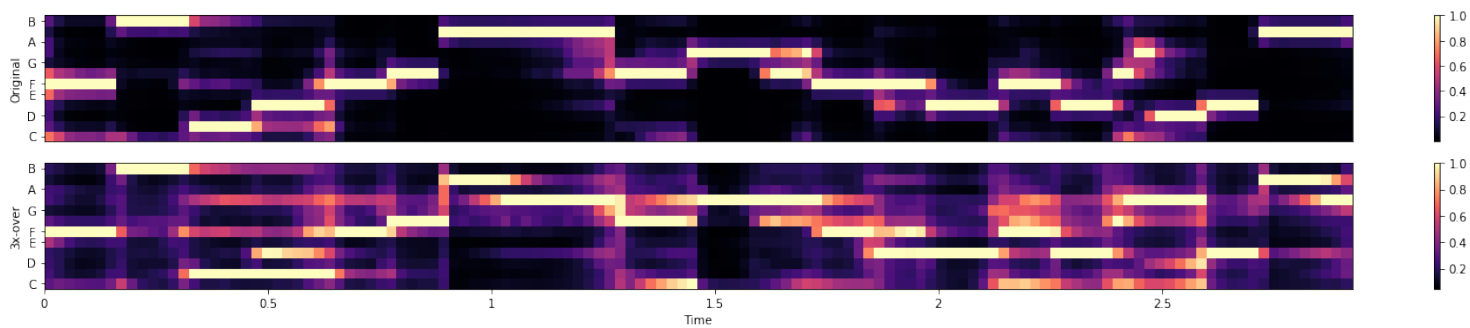
# Enhanced chroma and chroma variants (source1)

Enhanced chroma and chroma variants

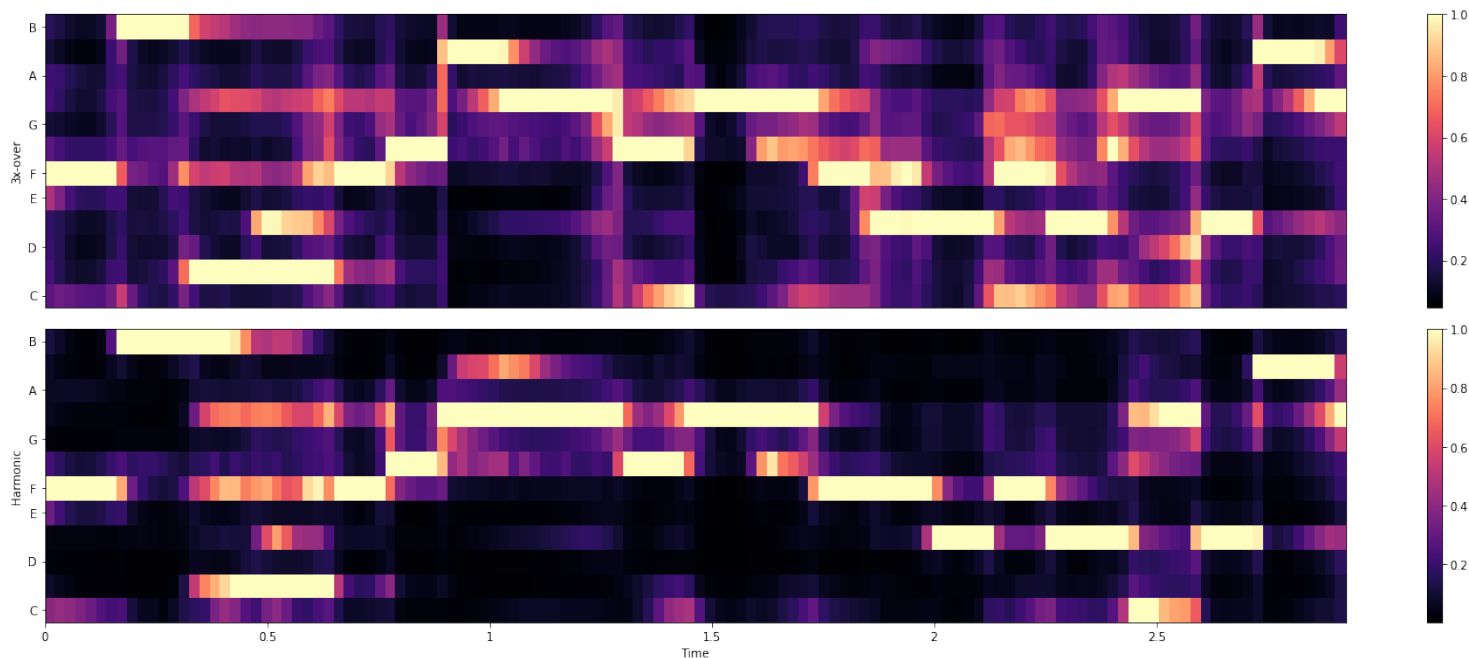
## Original source1



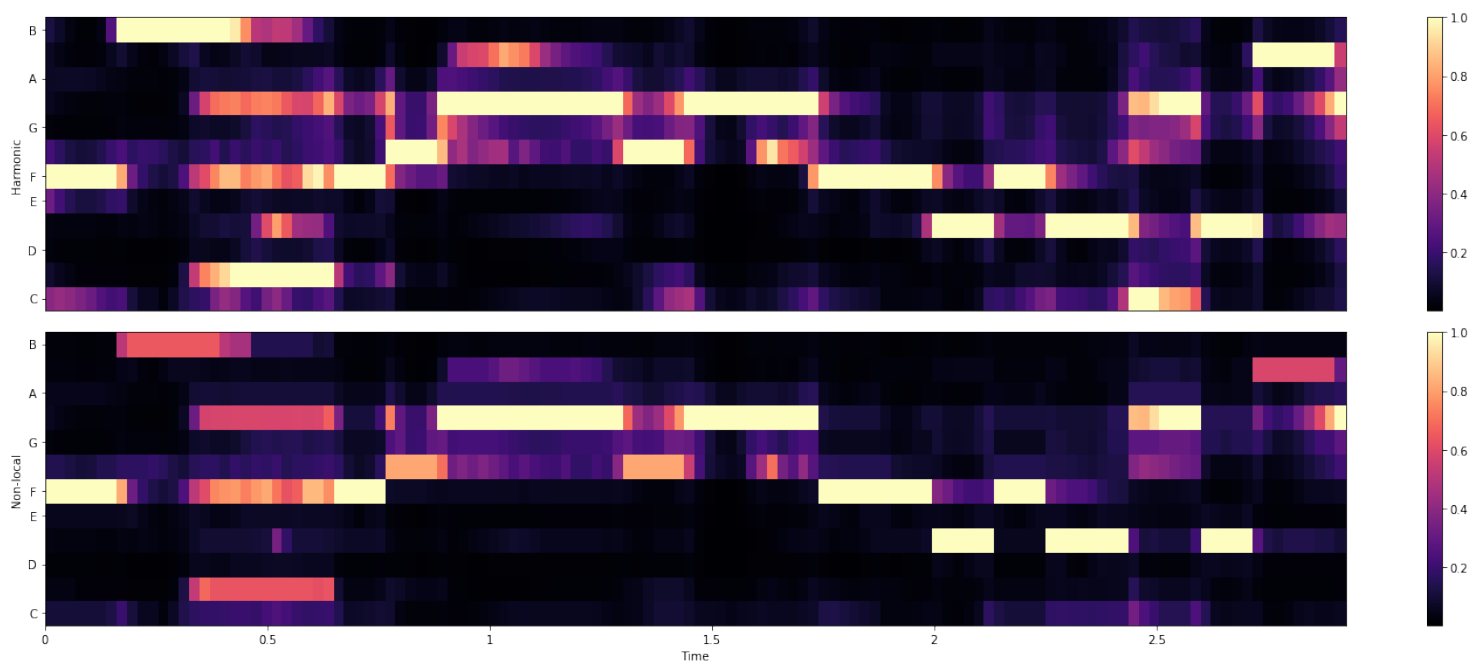
## Correct Tuning Deviations



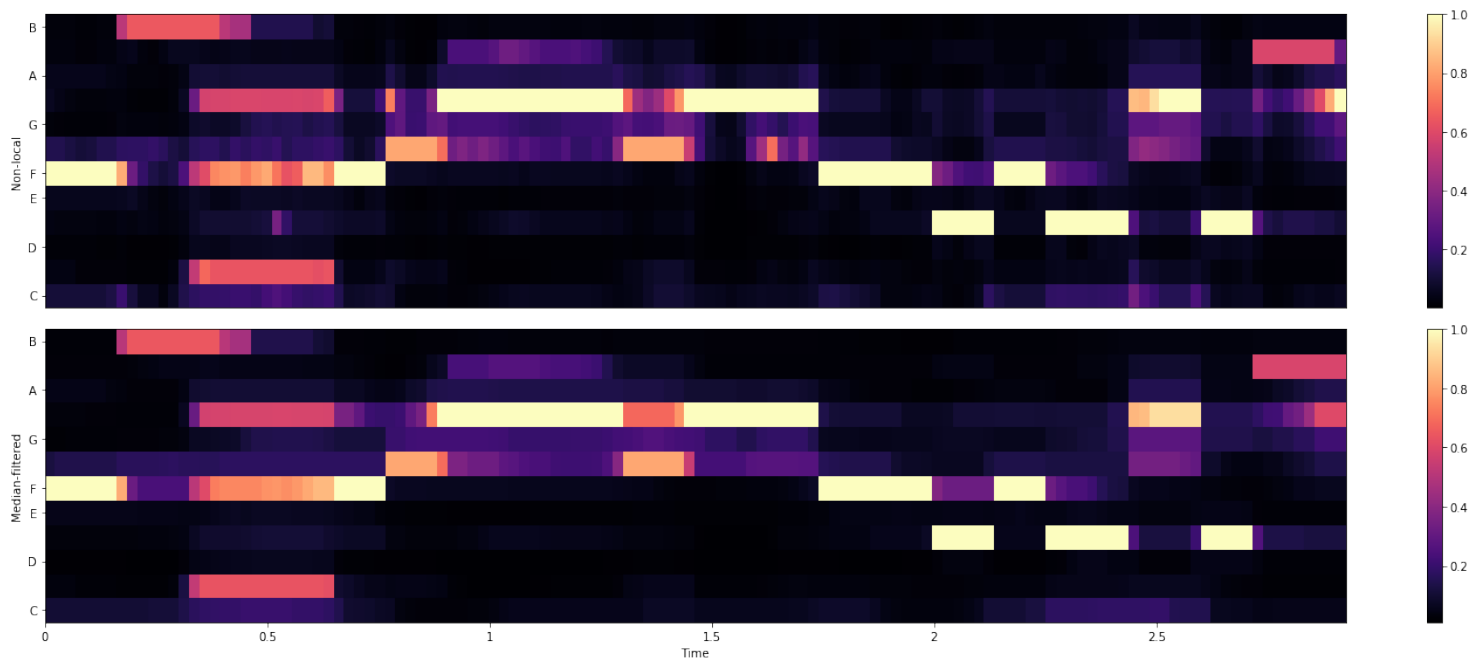
## Isolate harmonic component



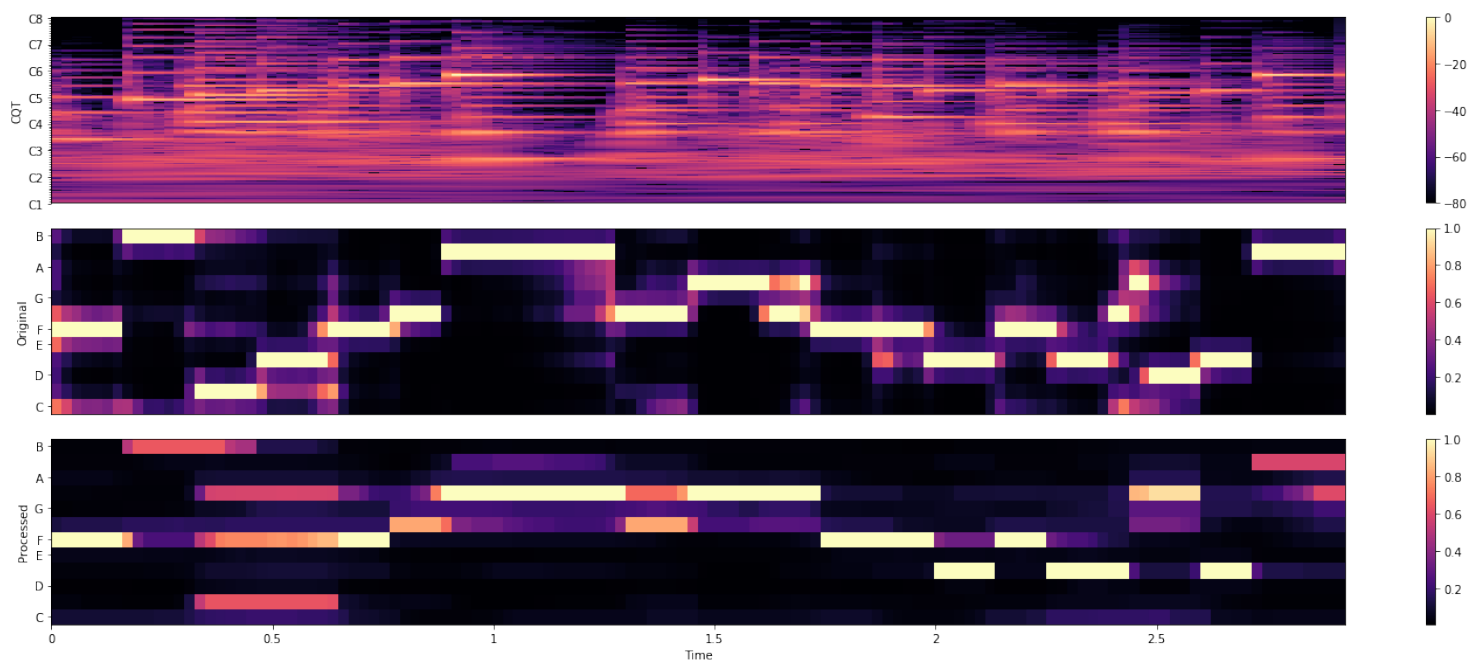
## Non-local filtering



## Horizontal Median Filter

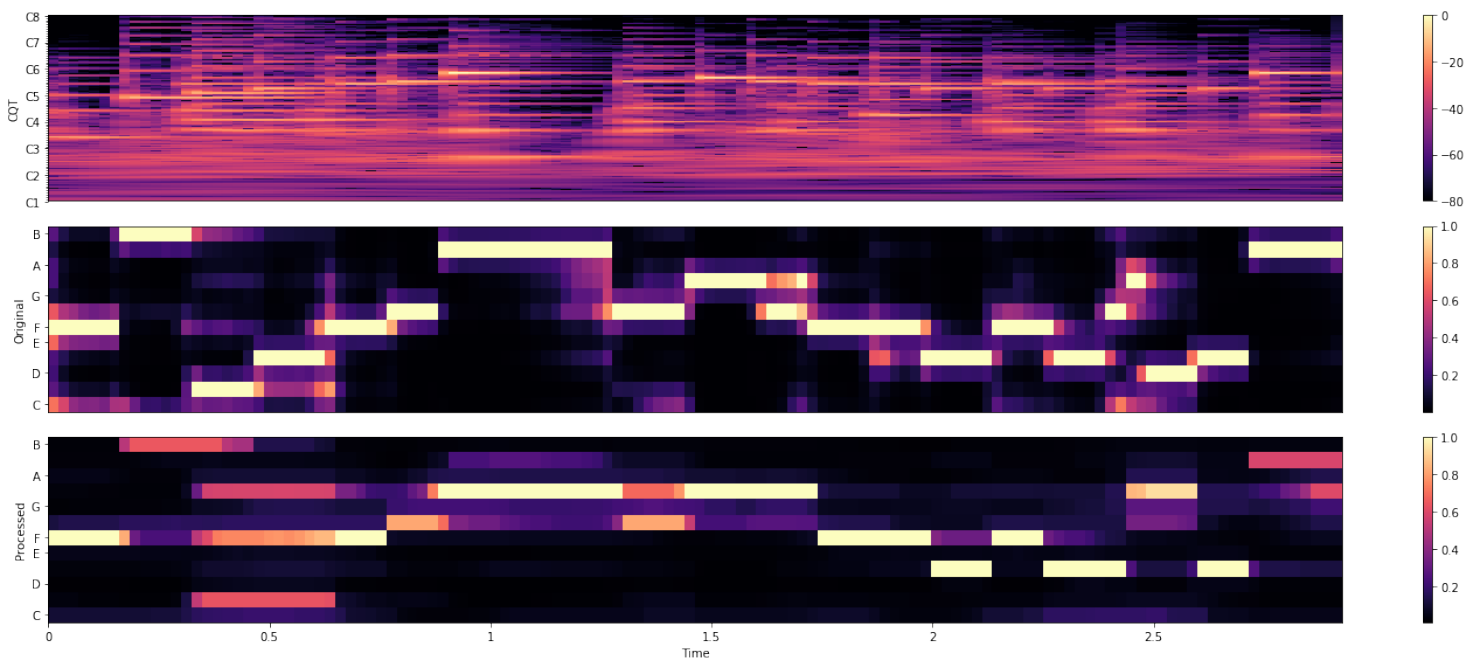


## Before and After

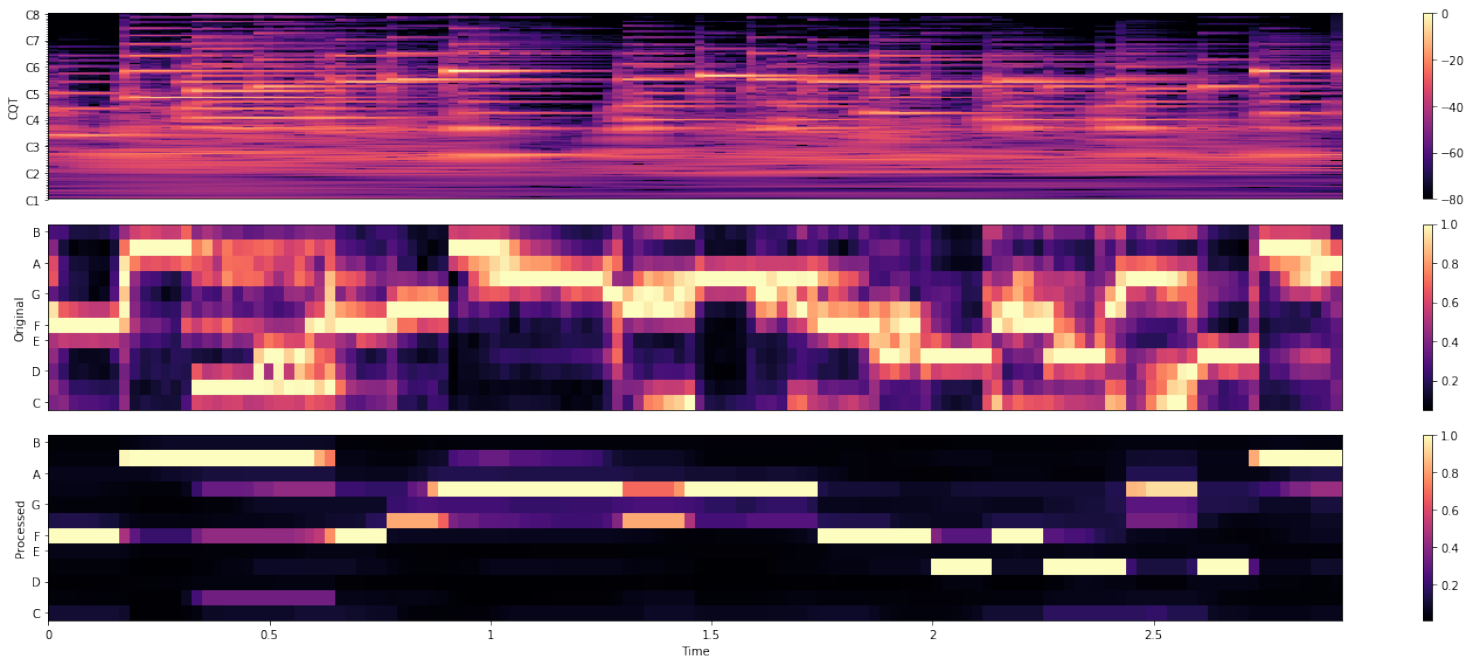


**Applying chroma enhancement techniques to source files**

# Source1

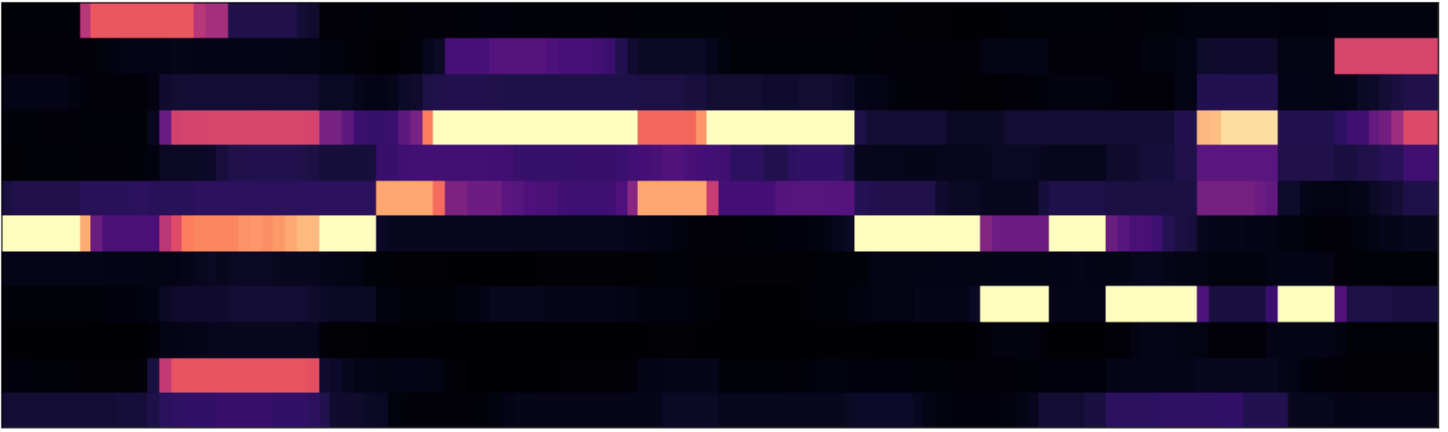


# Source2

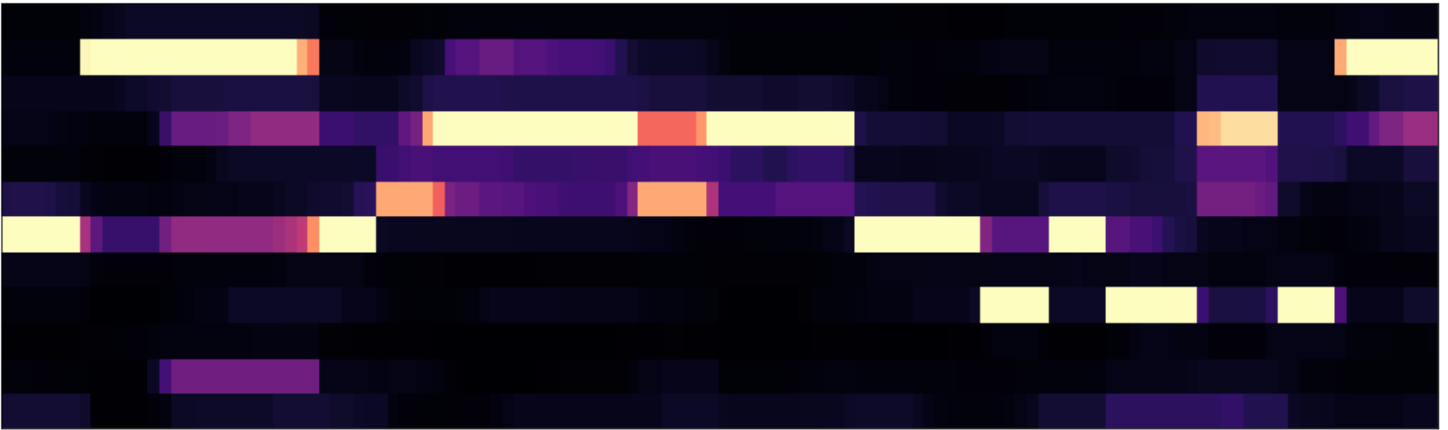


# Output comparisions for testing

Source1



Source2

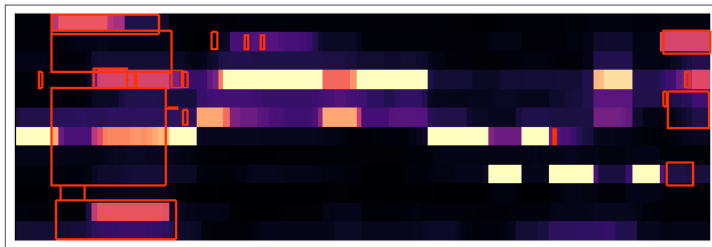


# Run imageDiff

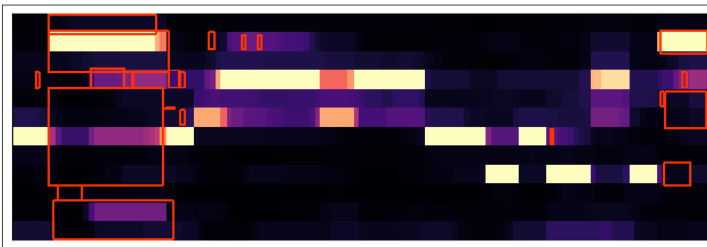
SSIM: 0.9220794266585013



Source1



Source2



Diff



Threshold

