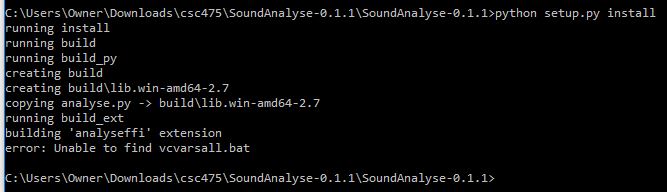
**Play With Yourself - Library Setup and Testing**

1. **Tools and Resources**
   1. **Libraries for Feature Extraction**

* Sound Analyse 0.1.1 - Nathan Whitehead  
  This is a Python Library for detecting pitch and loudness.
* Mir Eval 0.4 - Colin Raffel et al.  
  Mir Eval is a Python library designed for testing accuracy and correctness of MIR algorithms.

Sound Analyse 0.1.1 - Setup and testing.



Error - can’t find vcvarsall.bat.

Looking at the source code -> it appears that the program is optimized to working with the microphone -> so it ‘listens’ from that open stream.

It needs pyaudio and that is not found. - I installed it.

<https://pypi.python.org/pypi/PyAudio#downloads>

pip install some-package.whl

After running, the ‘analyse’ module was not found anyways.

OHHHHHHHH you can also do the pip install thing with SoundAnalyse

Needs VC ++ for python 2.7 (Anaconda, so downloading that). -> Attempt after this WORKED !!! :)

Ran sample code and it is supposed to print. Really small functionality.

Loudness in dB ||| Pitch.

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Mir Eval 0.4 - On the page says build|error. Does this mean it won’t work if installed?

It appears to be easy to install, just run pip install mir\_eval.

access module with import mir\_eval. > Did Not try it as it takes DATA in and NOT audio.It is used to return accuracy measurements on Mir procedures previously done.

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* Aubio  
  Aubio is a feature extraction library that can be used for both pitch and rhythm extraction. It is able to work in real time. Aubio is written in C, but it can be accessed from Python.

The Python module can be directly installed with [pip](https://pip.pypa.io/en/stable/quickstart/):

python -m pip install aubio

This installs aubio-0.4.4 successfuly.

Note: Appears that you can combine Vamp plugins with Aubio somehow. That’s COOL.

<https://aubio.org/vamp-aubio-plugins/>

<http://www.vamp-plugins.org/>

I will attempt to do that.

Must download from site, and apparently add path to Environment Variables, as well as .... moving .dll to correct path. Ok DID that but no way to verify other than running an aubio program.

Trying to run a working script.

<https://aubio.org/documentation> <<< Manual.

<https://aubio.org/doc/0.4.4/> << Some examples

No precise python implementation, just C. Will have to experiment/ translate.

FOUNDSOMETHING!!!: <https://github.com/aubio/aubio/tree/master/python/demos>

Tried examples - they worked. Umm didn’t try VAMP plugins YET. Can’t get it working, trying opening plugins in REAPER… Hmm. plus they are already MADE. There is a developer option but I didn’t look into that.

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* Pymir - jsawruk  
  This is python library for music information retrieval.

Looks good. a little limited, and kind of specifically requires PyAudio. Tried running example files in github repo zip downloaded. Errors happened. I think it's bad that it’s not so well documented, possibly.

Got it to work. For some reason it didn’t like the MP3 file. → Dependency is FFmpeg encoder.

test.py worked. -> I think it extracted the number of frames. Audio file was found in this case.

onsets.py worked -> gave onsets for like an array ? and was plotting them frame by frame. ‘using energy function’.

It doesn’t find the audio files although the path passed in is correct. I will require help.

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* Librosa - Dan Ellis and other members at LabROSA.  
  This is a Python Library for Audio and Music analysis.

Downloaded github repository and tested the example files.

But then did pip install librosa. Tried to run but asks for extra parameters.

Ran it with passing in the name of audio file and destination .csv file. -> Printed out estimated tempo and put beat times into a file.

Studied syntax briefly.

Fairly easy to get set up. No example file for pitch detection. Tried to make a chromagram, but it was not working. Will move on to VAMP plugins. For some reason it is not detecting the ‘display’ attribute in module ‘librosa’ -Problematic, might have to build from source -> Leave it to ADAR.

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* VAMP plugins.  
  These are plugins for audio feature extraction. VamPy is a program that allows us to use VAMP in Python.

The most complicated one. Pip didn’t work, and can’t really ‘run’ an example. There’s multiple things to download and it is different btw Mac and Windows.

<https://pypi.python.org/pypi/vamp/1.1.0> << Found this one, that might work but it’s not vampy.

Setting the path and moving to C:ProgramFilesX86:VampPlugins didn’t seem to install the Vamp. I don’t know how to get it recognized by the terminal.

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* 1. **Sample Implementations.**
* Sonots - Naotoshi Seo.  
  Sonots does pitch detection in Matlab --- Skipped this as it uses matlab, but we are using Python. --- It is good reference because it uses different methods of calculating pitch we could recreate with other libraries.

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* Frequency estimator - Endolith  
  Pitch detection Python.

This is in python so it could be helpful. However, we want to extract the key/tonality so extracting just one pitch might not be what we want.

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* Python beat detector - Shunfu  
  Real time beat detection python implementation.

This is python too. Beat detection is something we definitely need. Will run the program, see if it works,

It has a lot of dependencies. It is a little of a pain to install everything, but I will try.

**Can’t run-** couldn’t find packages required eather. Ui\_plot and PyQt4

Something is weird -> must look into. I have anaconda installed but also a Python 2.7 directory in C:.... This means that although a pack might be installed, it might not be looked at by Anaconda.

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* Bpm detector - Scaperot  
  Bpm detector for a complete .wav file, based on G. Tzanetakis’ algorithm in Audio Analysis using the Discrete Wavelet Transform.

**Can;t run.** Pywt not found.

pip install PyWavelets works.

conda install -c conda-forge pywavelets

try this command to solve installs in ‘wrong’ python

Was able to run it -> returned BPM for a wav file.

Looks like it was supposed to plot the autocorrelation, but it didn’t. It just closes the plot without showing anything.

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* 1. **Related projects.**
* Beat This - Kileen Cheng  
  A beat synchronization project created at Rice University.

Looked at this and it is matlab code, which can be used for reference, but we probably are not going to use the functions from matlab in python. Downloading matlab files.

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