Let Music Roll

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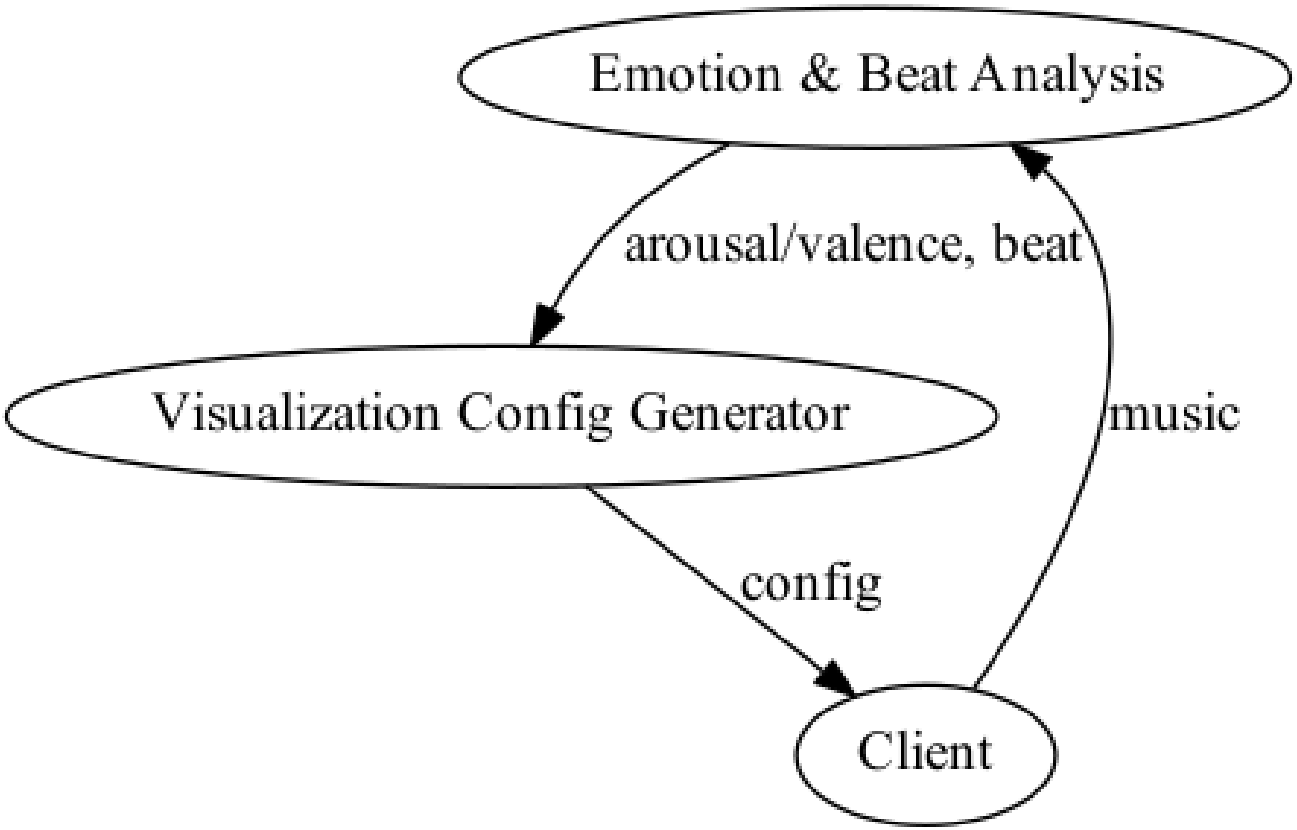
Project

Music understanding and visualization.



Beat Detection

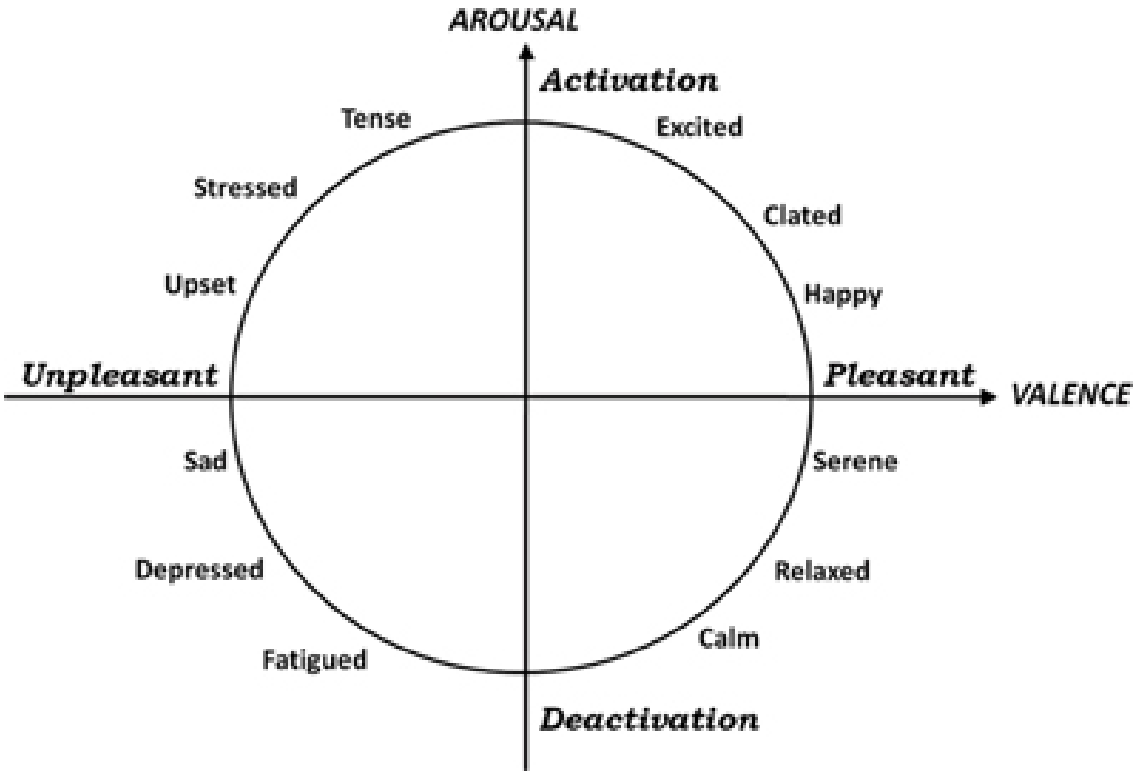
1. Separate percussive and harmonic:
   1. Short-time Fourier Transform
   2. Harmonic Percussive Source Separation
   3. Inverse Short-time Fourier Transform
2. Detect exact beats from percussive: local estimation with global regularization

Emotion Detection - Features

(a) Root Mean Square
(b) High Quefreqncy Log Frequency Spectrum
(c) Chromagram
(d) High Quefrency Chomagram
(e) Mel-frequency Cepstrum
(f) Low Quefrency Log Frequency Spectrum
(g) Log Frequency Spectrum
(h) dbPower
(i) Low Frequency Power

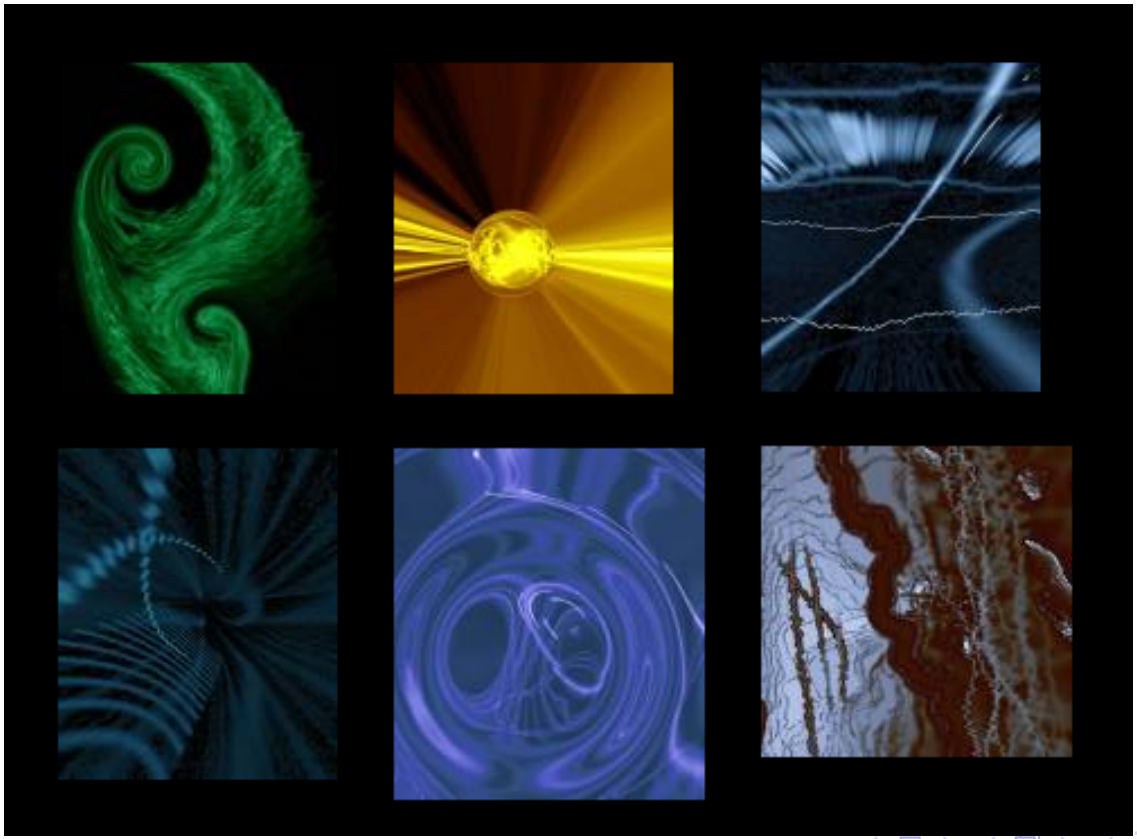
Emotion Detection - Data & Model

"Emotion in Music" public dataset.
Trained with Gradient Boosting Trees.
Predict Arousal/Valence of music segments with high accuracy.



3D Tour

Use pre-defined visualizations from Light.js/Three.js.
Show arousal/valence values with HighCharts.js.
Synchronize with the music using backend analysis results.
Totally differ from old-fashioned music visualization:



Demo!