Freesound Trip

Sónar Innovation Challenge 2017

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Mentors: Dmitry Bogdanov, Xavier Favory, Eduardo Fonseca

audio commons

The AudioCommons Challenge

- We propose to build a musical instrument using our tools:
  - Freesound collection and API
    - over 340,000 sounds
    - 50,000 sounds are downloaded everyday

  - Essentia library for audio and music analysis

The AudioCommons Challenge

- AudioCommons is a EU research project:

    - We aim to bring Creative Commons audio to creative communities and industries

    - We develop technologies for easy access to open sound and music collections

Want to create and enjoy your own world of sound?

Dive into Freesound through a sonic journey

Customize your Freesound Trip and navigate in a 3D space while listening to different generative sound compositions.

How to create your world

- Select the themes that define your trip
- Choose your BPM
- And … start!
- Every world is a different experience

How to navigate your world

- A 3D space will be created based on your choices
- Use your keyboard to explore it
- Get closer to different sounds to listen to them

Sound

How is your world created

- Sounds are taken from Freesound

- We processed them with the Essentia audio analysis library

- We mapped temporal and spectral features of sounds to the 3D space

- Each sound is a point in this space

- Similar sounds are grouped together

Data

For the geeks

- 27,000 sounds

Data

For the geeks

- 27,000 sounds

- 14 MIR descriptors

```python
# Sound descriptors
for i in d:
    X[i] = (d['lowlevel.mfcc.mean'][1:] +
            [d['lowlevel.spectral_centroid.mean']] +
            [d['lowlevel.spectral_flux.var']] +
            [d['lowlevel.pitch_salience.mean']] +
            [d['lowlevel.spectral_entropy.mean']] +
            [d['lowlevel.spectral_flatness_db.mean']] +
            [d['lowlevel.spectral_spread.mean']] +
            [d['lowlevel.dissonance.mean']] +
            [d['lowlevel.zerocrossingrate.mean']] +
            [d['lowlevel.hfc.mean']] +
            [d['sfx.temporal_decrease']] +
            [d['sfx.logattacktime']] +
            [d['sfx.oddtoevenharmonicenergyratio.mean']] +
            [d['sfx.strongdecay']])
```

For the geeks

- 27,000 sounds

- 14 MIR descriptors

```python
# Normlize the matrix
X = np.array(X)
X = (X - X.mean(axis=0)) / X.std(axis=0)
```

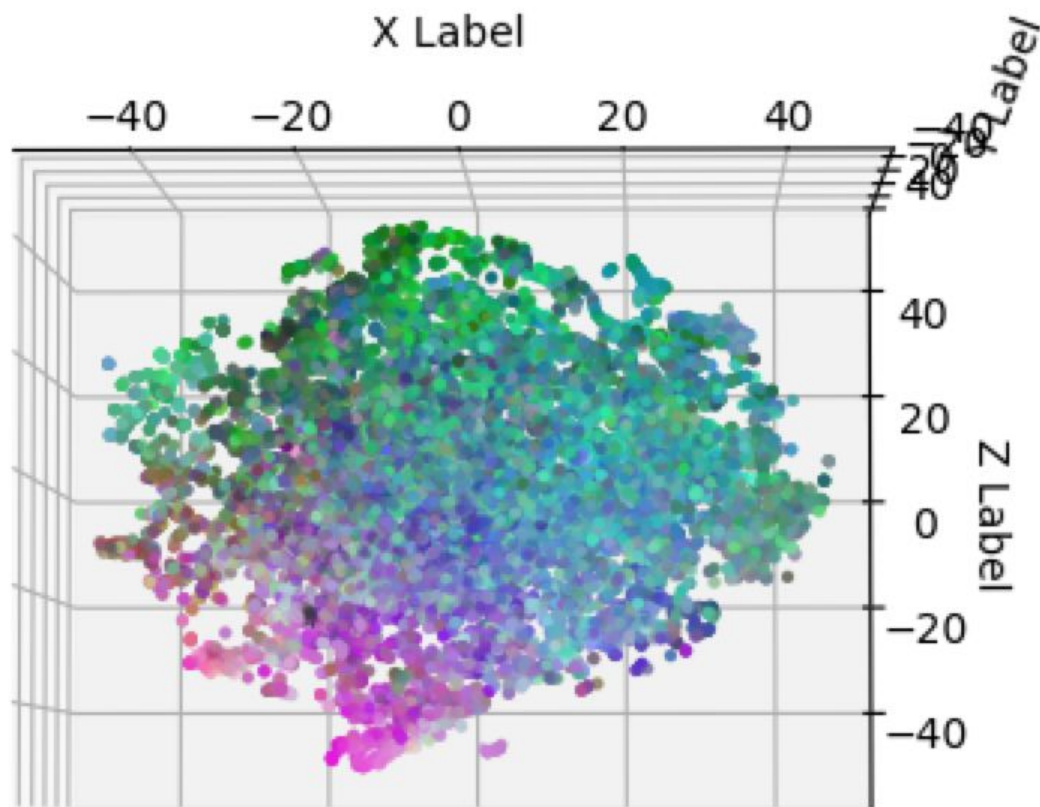# For the geeks

- 27,000 sounds

- 14 MIR descriptors

- tSNE

```python
# Normlize the matrix
X = np.array(X)
X = (X - X.mean(axis=0)) / X.std(axis=0)
```

```python
tsne(X, dimensions=3, perplexity=10)
```

Data

For the geeks

- 27,000 sounds

- 14 MIR descriptors

- tSNE

- 3D

Python

- 32 core / 244MB RAM / AWS EC2

- Jupyter Notebook, numpy

Javascript

- three js

- web audio

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