BENJAMIN DOYLE

PYTHON FOR DATA SCIENCE, CSCI E-29

HARVARD UNIVERSITY

CLASSIFYING POP MUSIC USING MACHINE LEARNING

CSCI E-29 2018 STAFF

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ABSTRACT

- Machine Learning

"Discipline concerned with the implementation of computer software that can learn autonomously."

- Supervised vs. Unsupervised

Supervised = trained

Unsupervised = untrained

https://www.britannica.com/technology/machine-learning

ABSTRACT

- Gaussian Naïve Bayes

Supervised Machine Learning Classifier

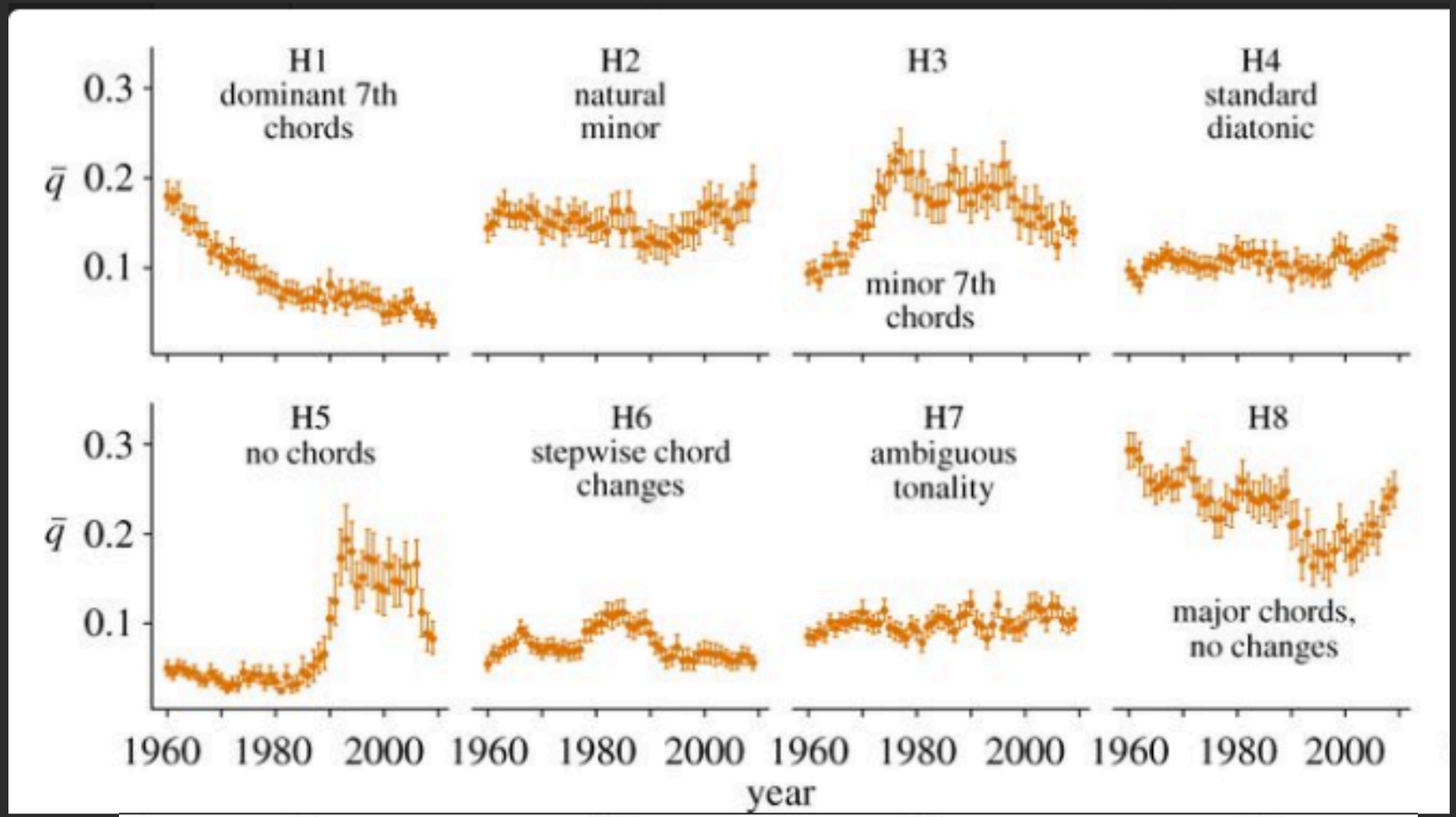
Probabilistic Classifier

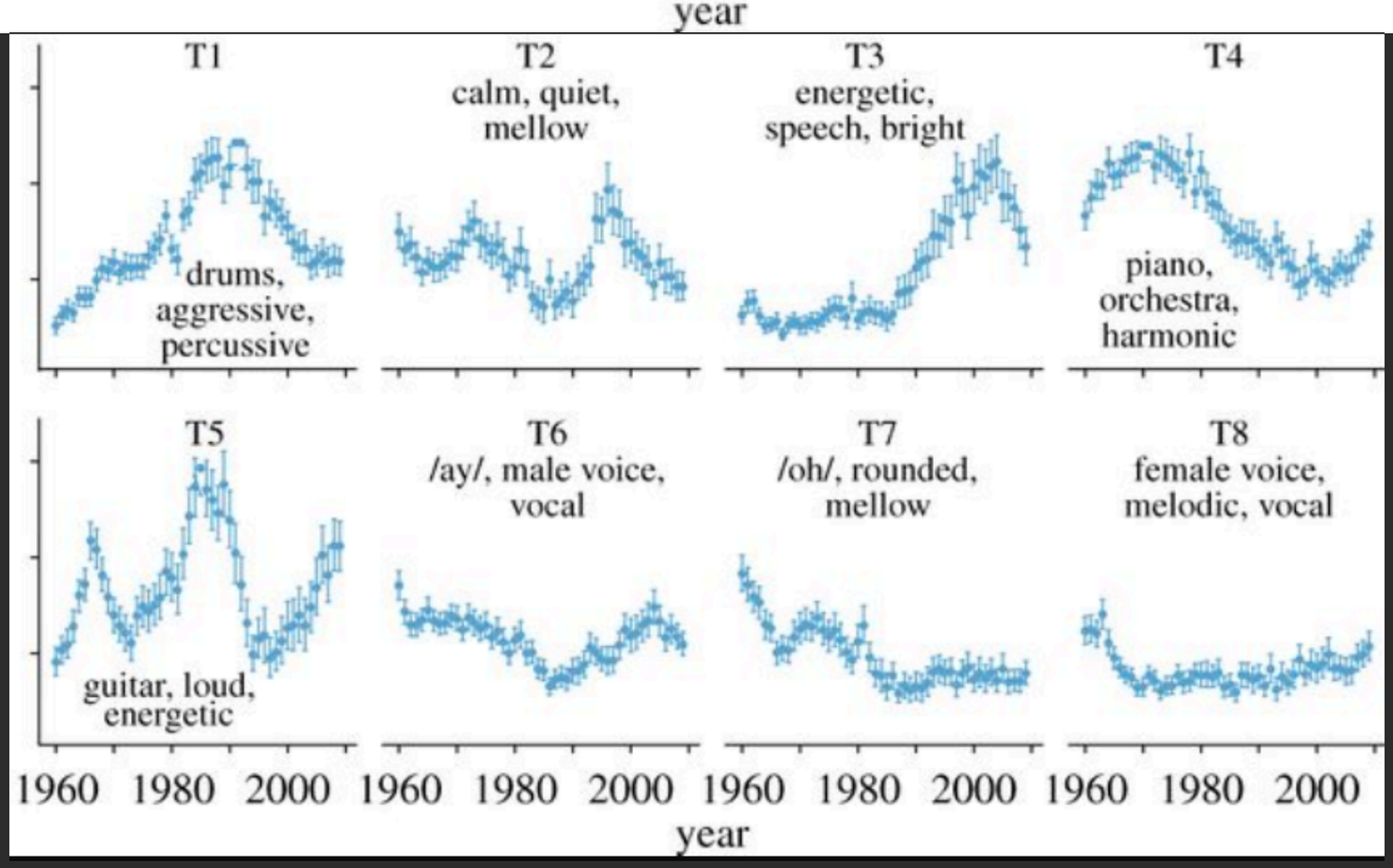
- Pop music dataset:

The evolution of popular music: USA 1960–2010

Matthias Mauch, Robert M. MacCallum, Mark Levy, Armand M. Leroi

Published 6 May 2015. DOI: 10.1098/rsos.150081


H1
dominant 7th chords
H2
natural minor
H3
minor 7th chords
H4
standard diatonic
H5
no chords
H6
stepwise chord changes
H7
ambiguous tonality
H8
major chords, no changes
$\bar{q}$
0.3
0.2
0.1
1960
1980
2000
year


T1
drums, aggressive, percussive
T2
calm, quiet, mellow
T3
energetic, speech, bright
T4
piano, orchestra, harmonic
T5
guitar, loud, energetic
T6
/ay/, male voice, vocal
T7
/oh/, rounded, mellow
T8
female voice, melodic, vocal
1960
1980
2000
year

REQUIRED LIBRARIES AND FILES

- PANDAS

conda install -c anaconda pandas=0.19.2

- DATASET URL

https://figshare.com/articles/Main_Dataset_for_Evolution_of_Popular_Music_USA_1960_2010_/1309953

- JUPYTER NOTEBOOK URL

https://github.com/bendbir/pop_music_gnb_e29

REFERENCES

- https://www.britannica.com/technology/machine-learning
- https://machinelearningmastery.com/better-naive-bayes/
- https://jakevdp.github.io/PythonDataScienceHandbook/05.05-naive-bayes.html
- https://stats.stackexchange.com/questions/23490/why-do-naive-bayesian-classifiers-perform-so-well
- https://figshare.com/articles/Main_Dataset_for_Evolution_of_Popular_Music_USA_1960_2010_/1309953 (dataset)
- http://rsos.royalsocietypublishing.org/content/2/5/150081 (article)

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