Song genre classification via waveform analysis

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Goal

Given just the waveform data of a song, classify what musical genre the song falls into

Why?

- Can use this technology to recommend music to listeners based on what they are listening to

- Record labels can choose what songs to release next based on their similarity to what is 'hot'

Data Source

- 1000 songs total from personal music library
- 200 songs per genre for each of 5 genres: hip-hop (rap), classical, techno, rock, and pop.

Pipeline
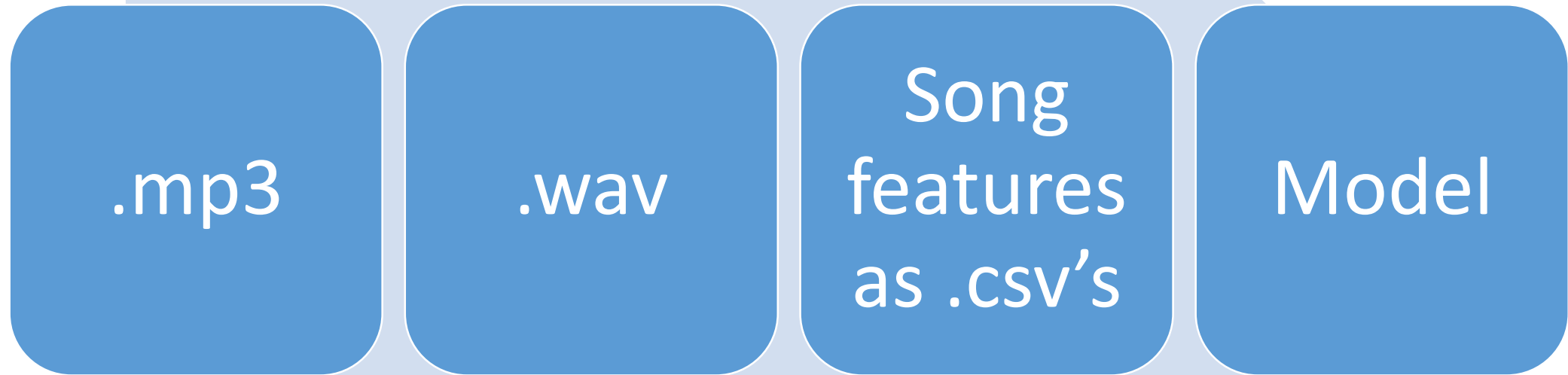
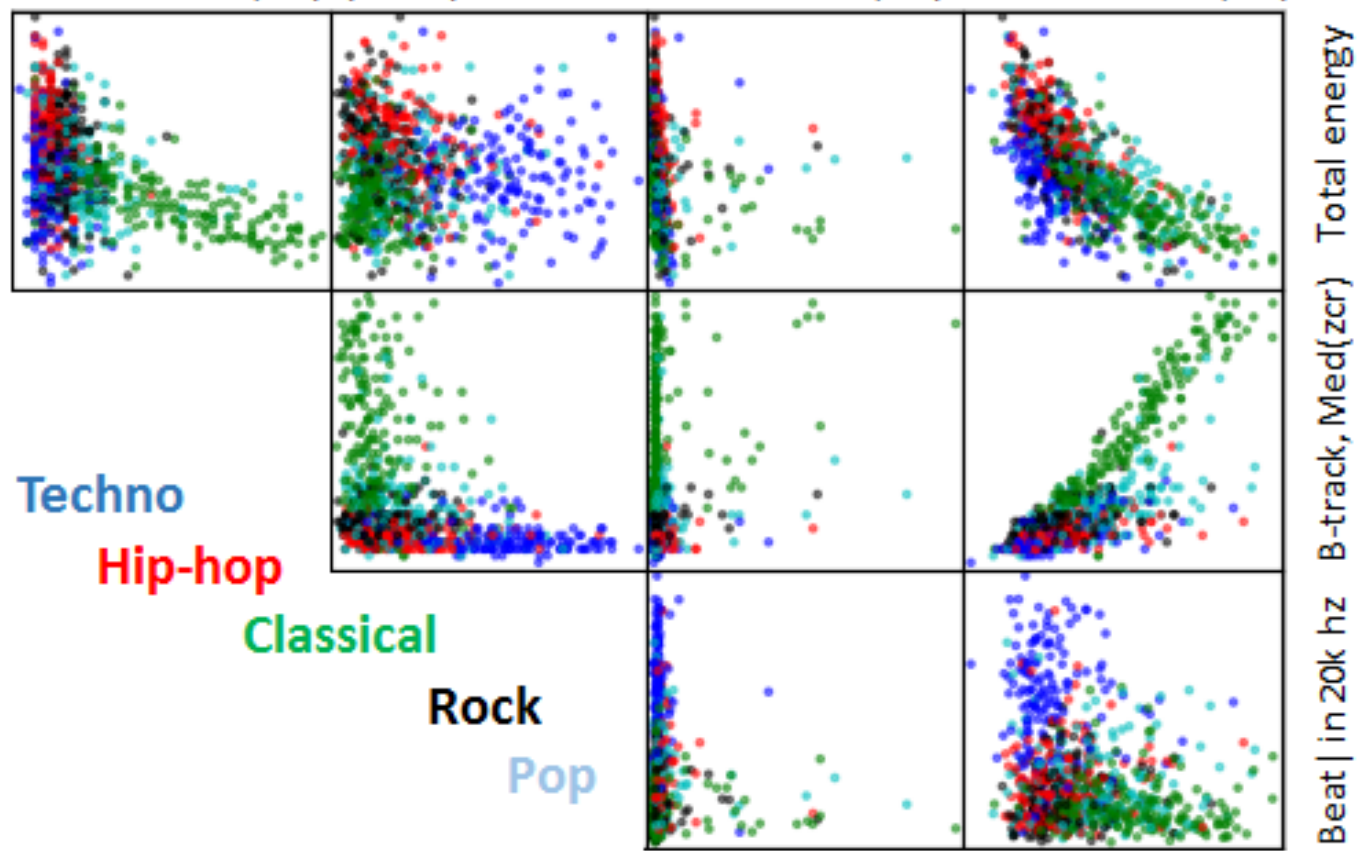# Summary of features

- Engineered nine features from FFT and time domain analysis
  -For example: power, beat, crossing rate

Before modeling, let's look at a few scatter plots to look for 'signal'

Bivariate Scatter Plots

K-Fold Aggregate Confusion Matrix: Gradient Boosting Classifier

	hip	roc	pop	cla	tec
hip	139.0	20.0	23.0	0.0	13.0
roc	20.0	132.0	67.0	7.0	15.0
pop	27.0	44.0	75.0	15.0	15.0
cla	3.0	5.0	22.0	178.0	0.0
tec	15.0	3.0	17.0	4.0	161.0

Actual / Predicted

Recall=67.2, Precision=67.9
F1=67.4, Accuracy=67.2

Unsupervised Learning: K-Means Clustering

K-Means Cluster Purities
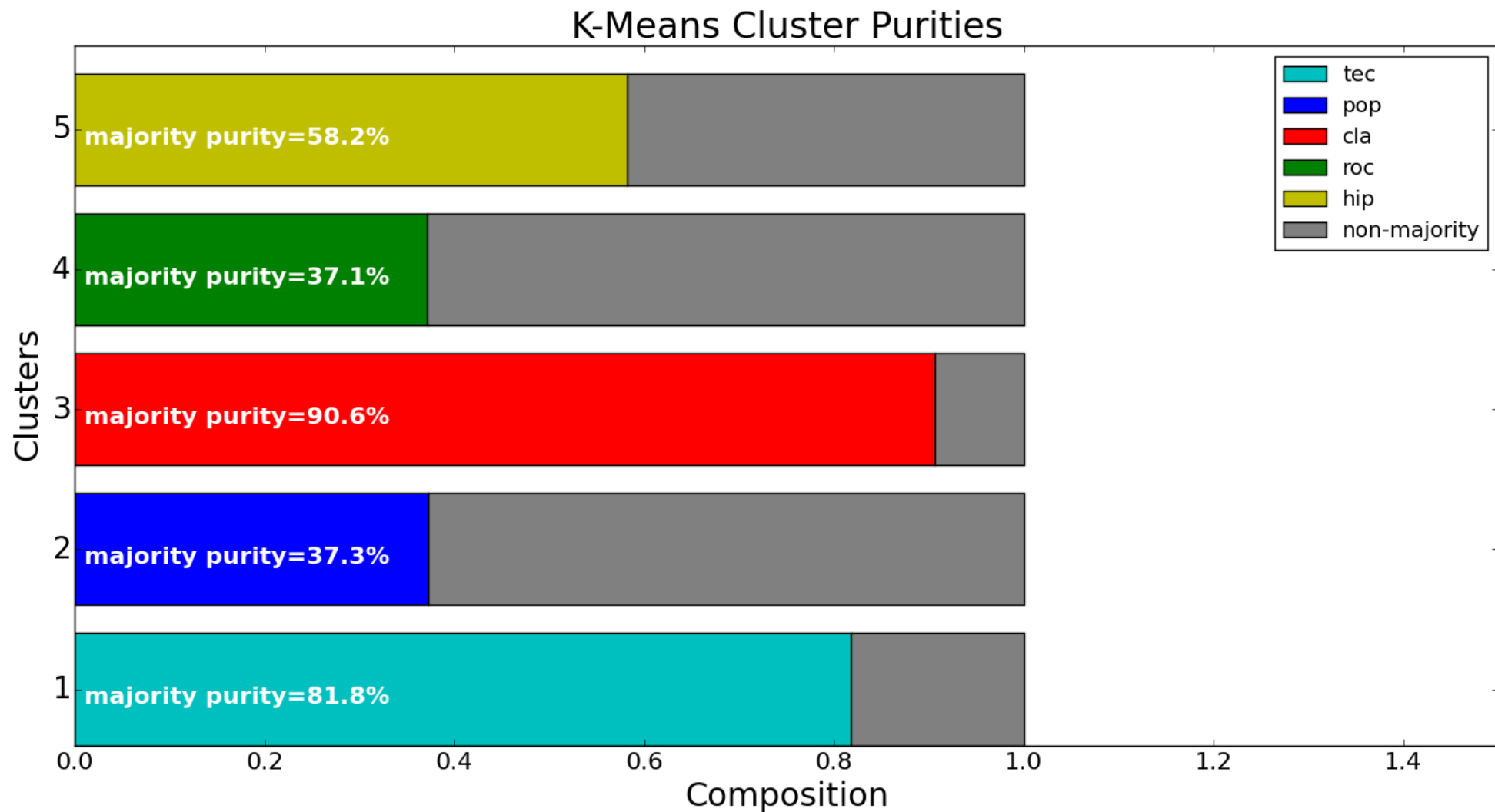
Future work

- Get more songs to build better model!

Thank You!

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