

# Genrify

Find your *groove*

David Wismer  
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# What is Genrify?

Genrify is a web application that uses the Spotify API and classification techniques to predict EDM sub-genre classification based on audio features.

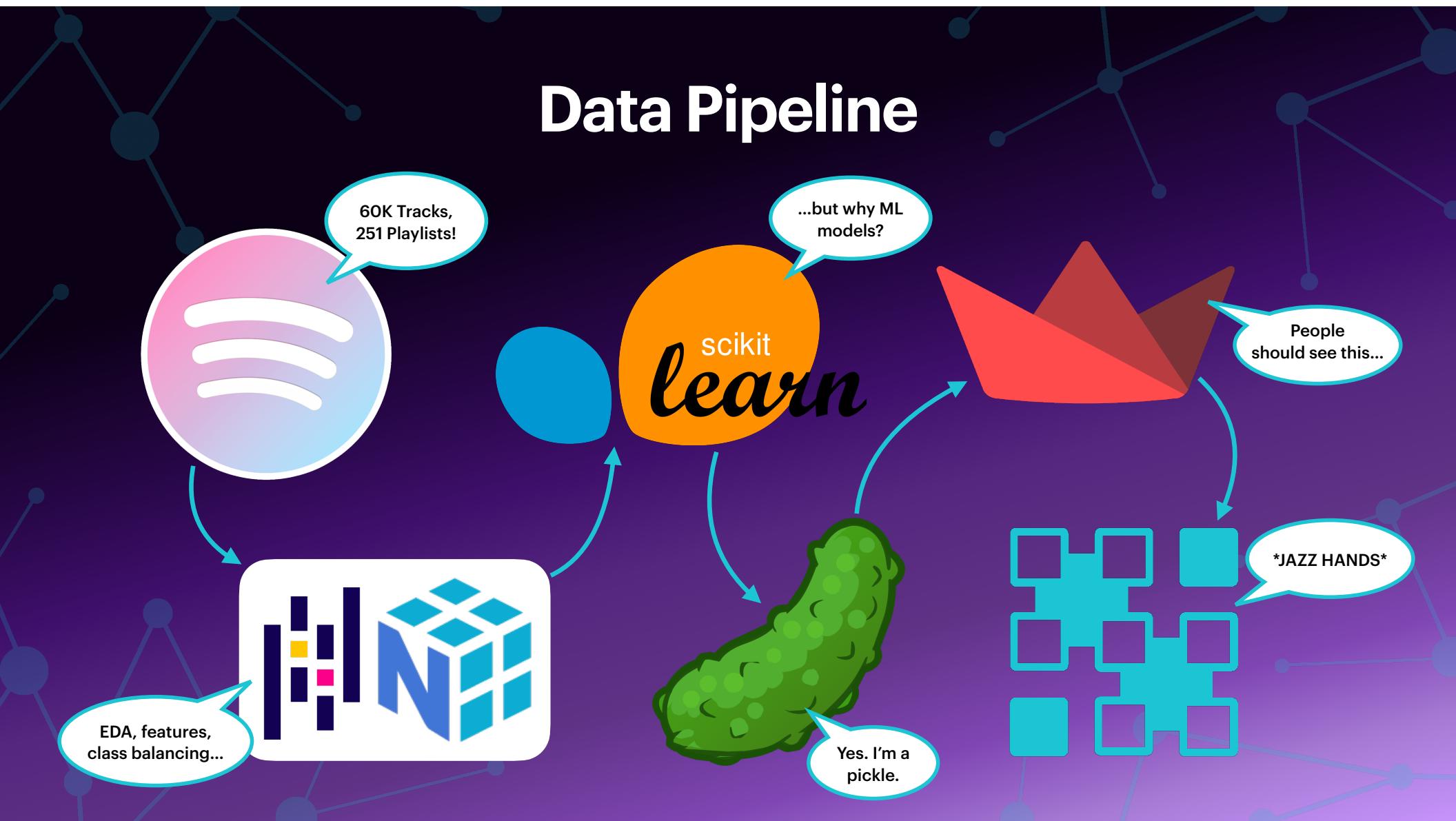
## Genrify Tools:

- Recommendations classifier
- Playlist classifier
- Individual track classifier

## Use Cases:

- EDM Artists** - What genre recommendation does my music generate?
- Listeners** - If I like country music, what kind of EDM music might I enjoy?

# Data Pipeline



# Audio Features

■ Acousticness

■ Danceability

■ Duration (ms)

■ Energy

■ Instrumentalness

■ Key

■ Liveness

■ Loudness

■ Mode

■ Speechiness

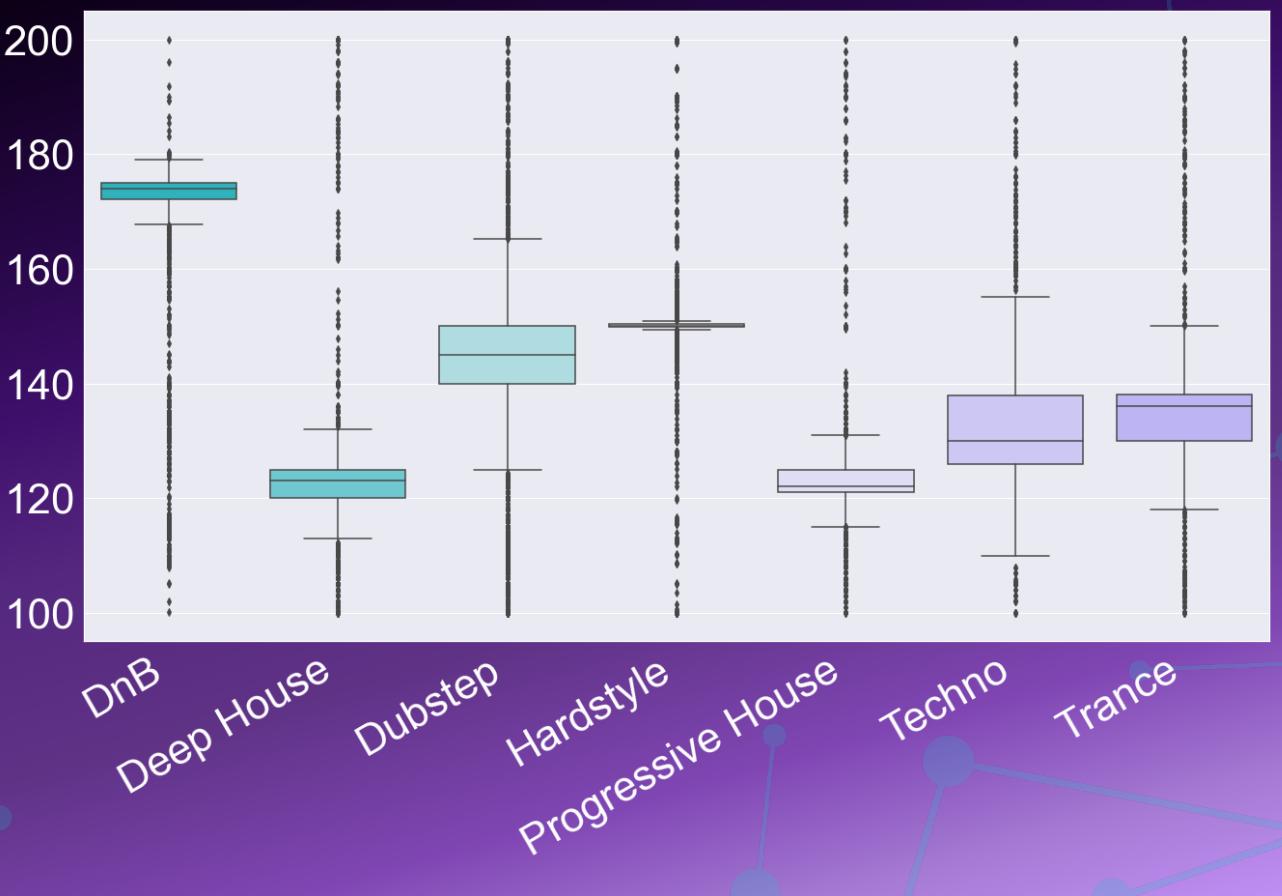
■ Time Signature

■ Tempo

■ Valence

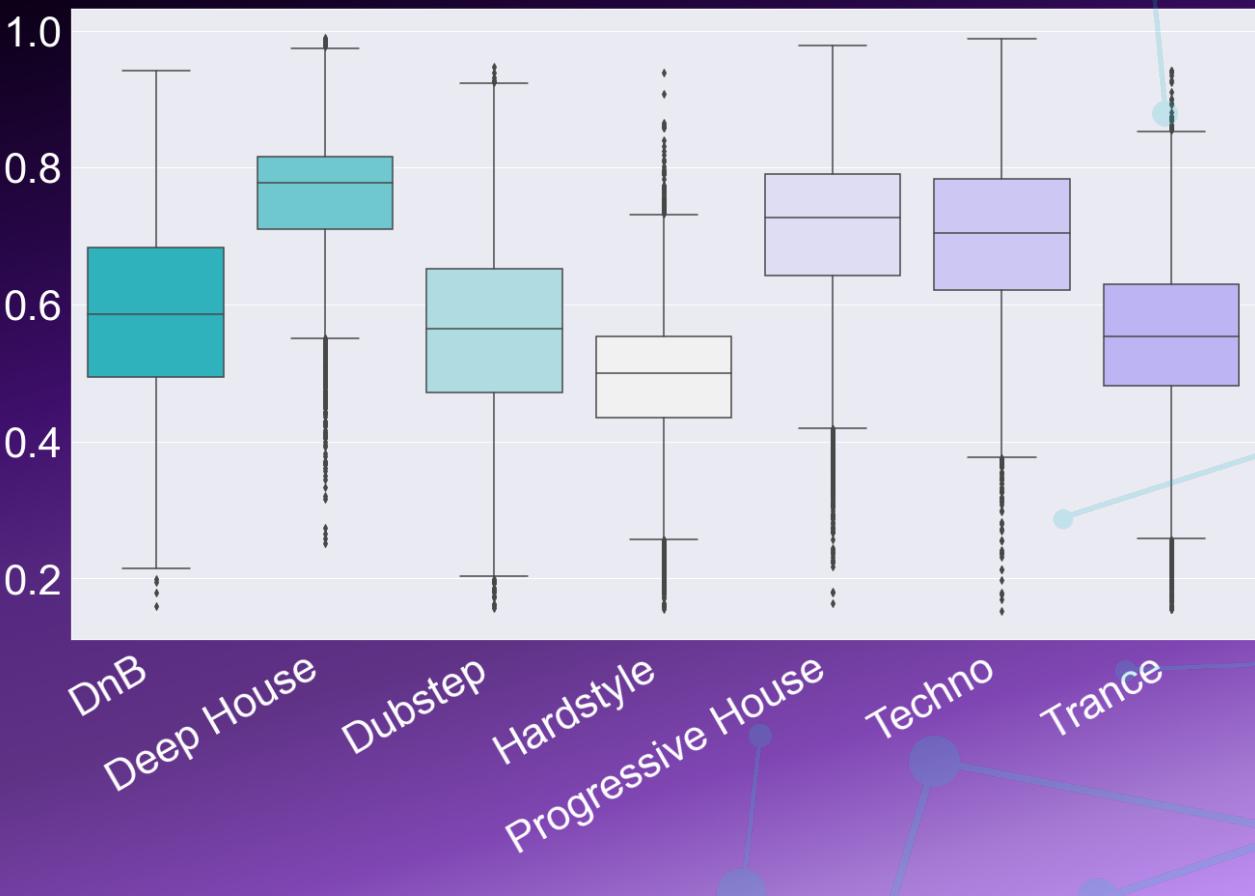
# Audio Features

- Tempo
- Danceability
- Loudness



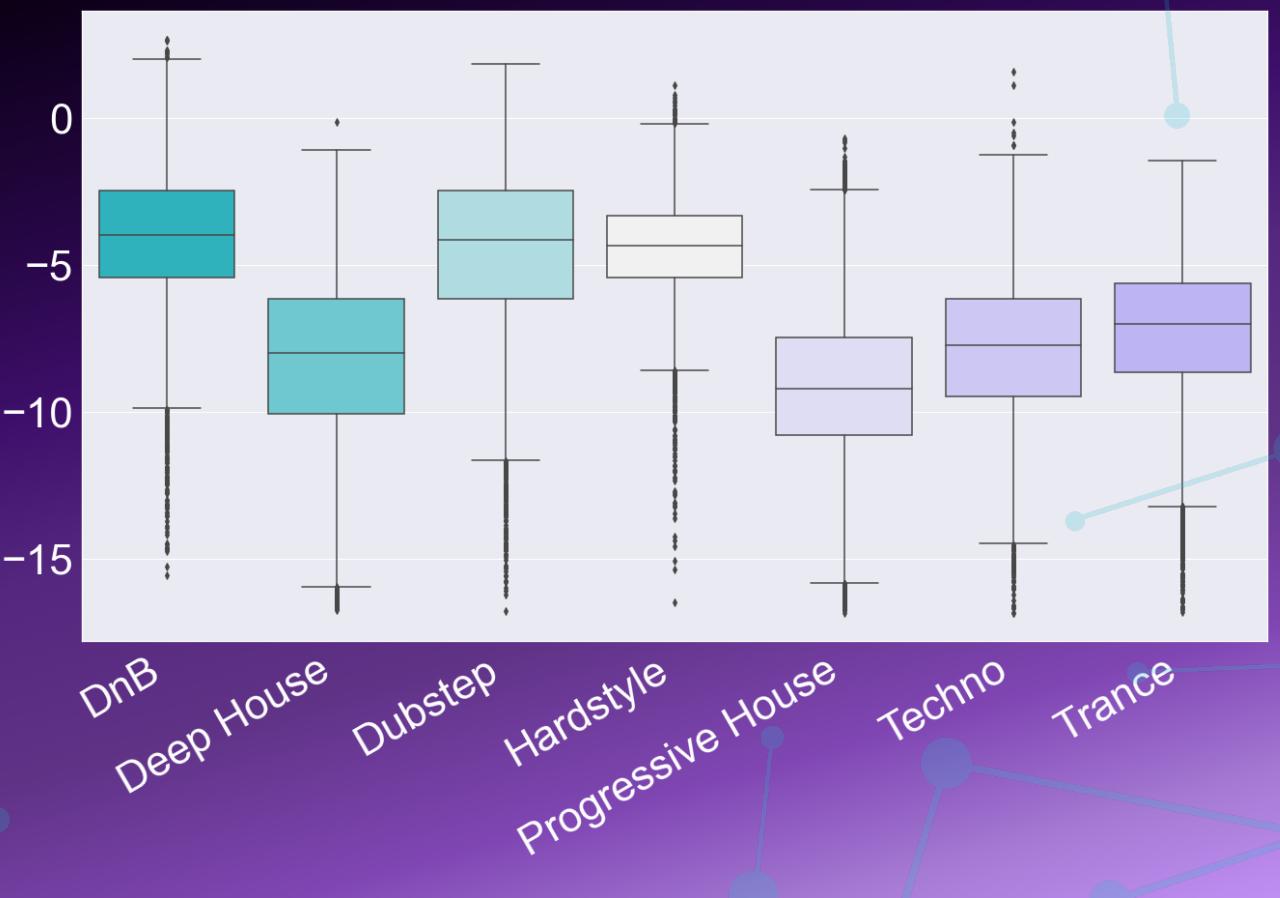
# Audio Features

- Tempo
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# Audio Features

- Tempo
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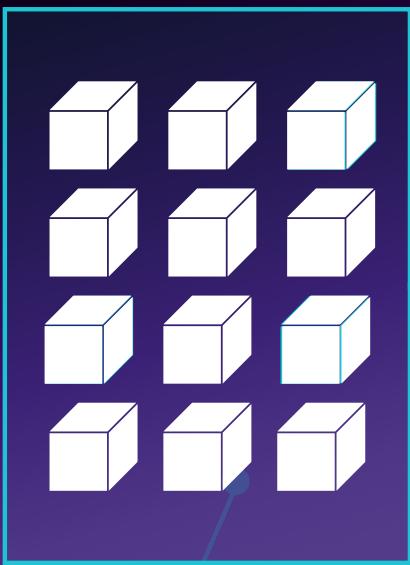


# Modeling Workflow

Logistic Regression  
Gaussian Naive Bayes  
K Nearest Neighbors  
Support Vector Classifier  
Decision Tree  
Bagged Decision Tree  
Random Forest  
XGBoost Classifier  
XGBoost Random Forest

# Modeling Workflow

Baseline  
Evaluation



Tuning and  
Validation



Final Model  
Refinement



# Model Evaluation

- Training Score: **99.8%**
- Cross Val Score: **76.0%**
- Testing Score: **76.4%**

**Normalized by Actual**

\*\*\*Rows Sum to 100%

True Classification	Predicted Classification						
	Deep House	Drum n' Bass	Dubstep	Hardstyle	Progressive House	Techno	Trance
Deep House	78.2%	0.5%	1.9%	0.2%	10.8%	6.9%	1.5%
Drum n' Bass	1.0%	91.7%	3.5%	0.6%	0.2%	1.7%	1.3%
Dubstep	3.7%	5.1%	69.2%	11.1%	1.1%	4.0%	5.7%
Hardstyle	0.1%	0.6%	6.8%	90.7%	0.1%	0.8%	0.8%
Progressive House	12.1%	0.1%	1.5%	0.1%	75.9%	5.1%	5.2%
Techno	14.6%	0.6%	4.0%	0.7%	10.9%	56.4%	12.8%
Trance	3.5%	0.5%	4.2%	0.9%	4.8%	12.4%	73.8%



# Model Evaluation

- Training Score: **99.8%**
- Cross Val Score: **76.0%**
- Testing Score: **76.4%**

**Normalized by Prediction**

\*\*\*Columns Sum to 100%

True Classification	Predicted Classification						
	Deep House	Drum n' Bass	Dubstep	Hardstyle	Progressive House	Techno	Trance
Deep House	70.0%	0.5%	2.1%	0.2%	11.0%	8.2%	1.4%
Drum n' Bass	0.9%	92.2%	3.7%	0.6%	0.2%	1.9%	1.2%
Dubstep	3.3%	5.4%	76.4%	11.1%	1.1%	4.7%	5.5%
Hardstyle	0.1%	0.6%	7.2%	86.4%	0.1%	0.9%	0.8%
Progressive House	10.1%	0.1%	1.6%	0.1%	72.2%	5.7%	4.8%
Techno	12.3%	0.6%	4.2%	0.7%	10.5%	63.5%	11.9%
Trance	3.3%	0.5%	4.9%	0.9%	5.0%	15.1%	74.4%

# Problem Genres

- ❖ Techno (#1)
- ❖ Dubstep
- ❖ Deep House

## Tempo

#1 Feature  
Importance  
(0.347)

## Danceability

#2 Feature  
Importance  
(0.101)

## Loudness

#3 Feature  
Importance  
(0.093)

