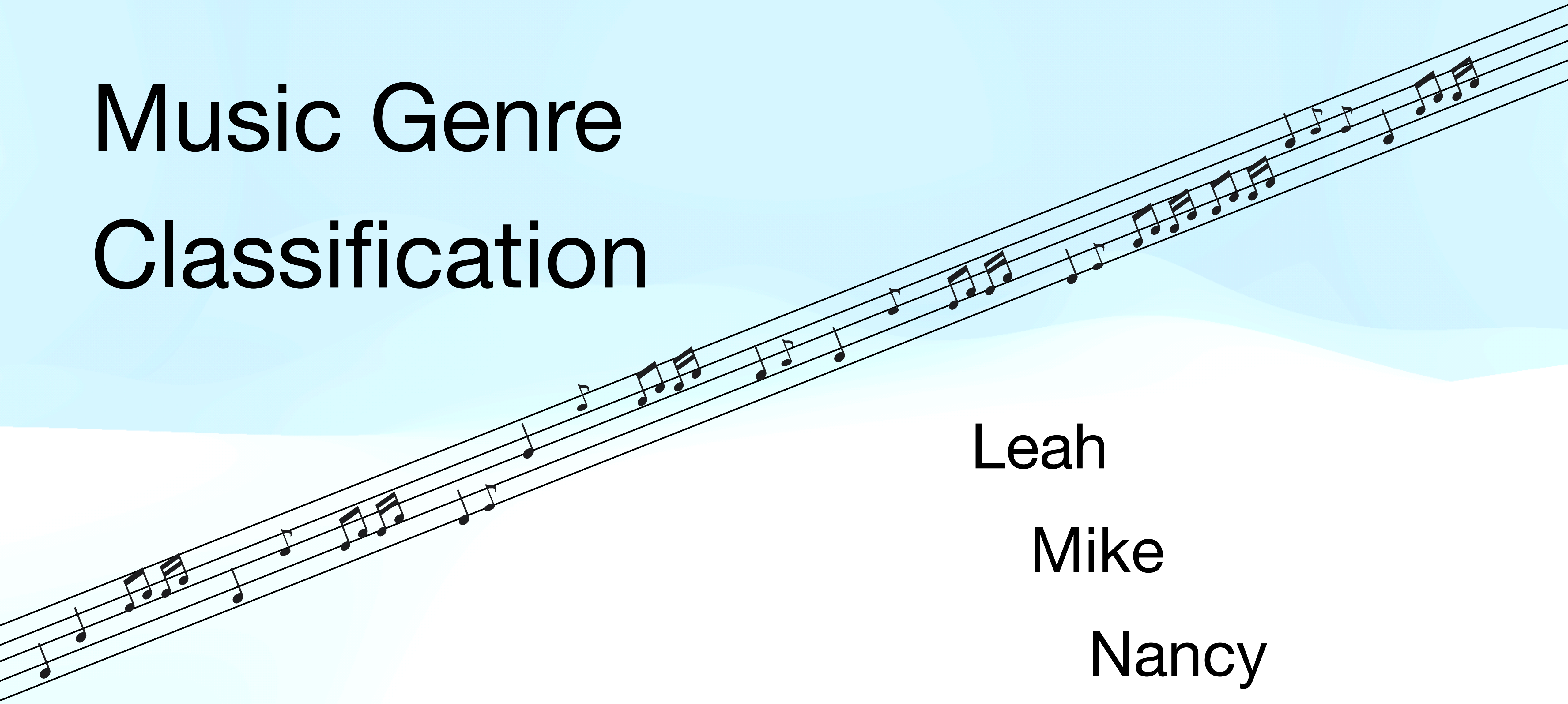


Sound Check

Music Genre Classification



Leah

Mike

Nancy

Noah

Data



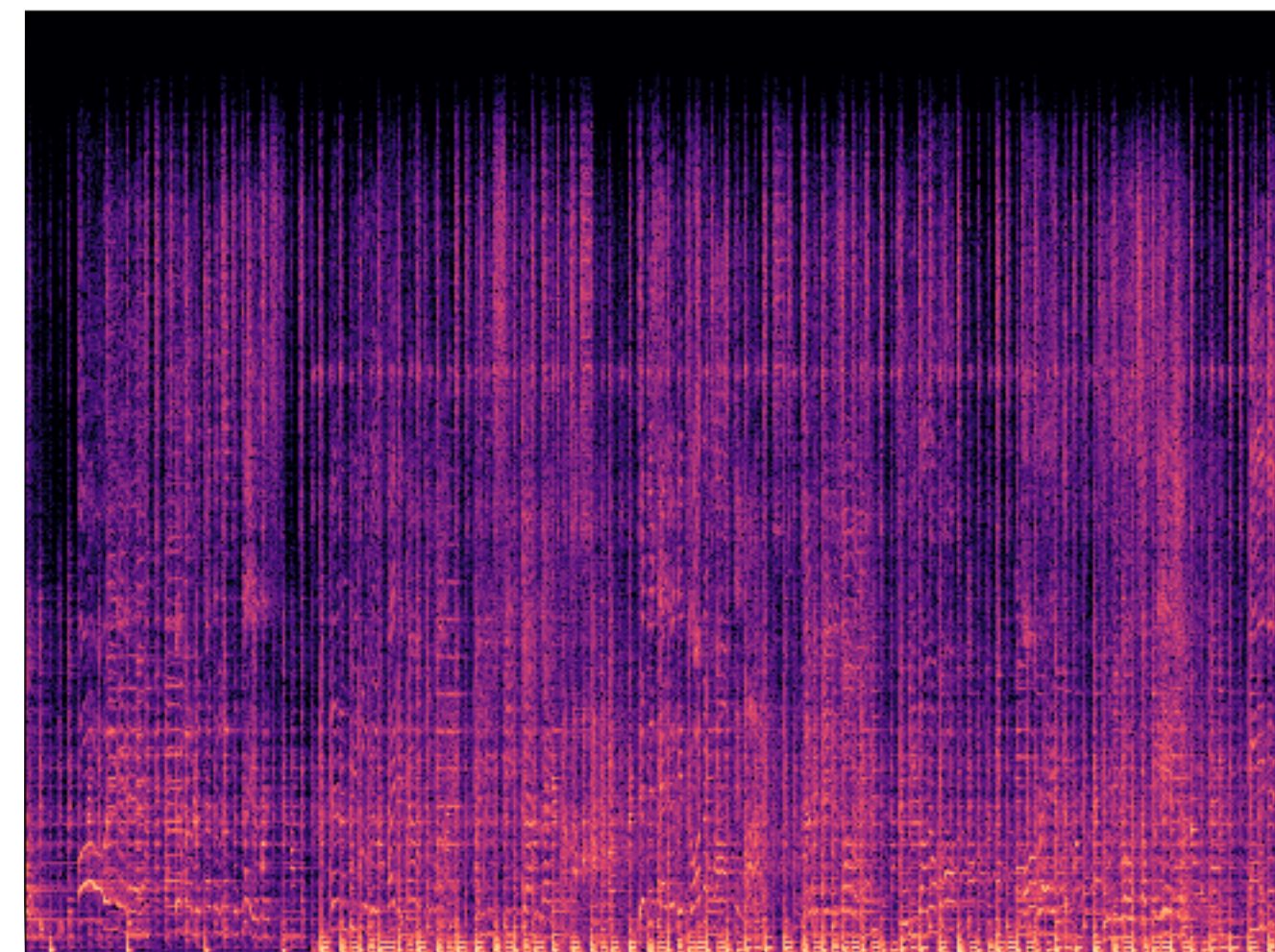
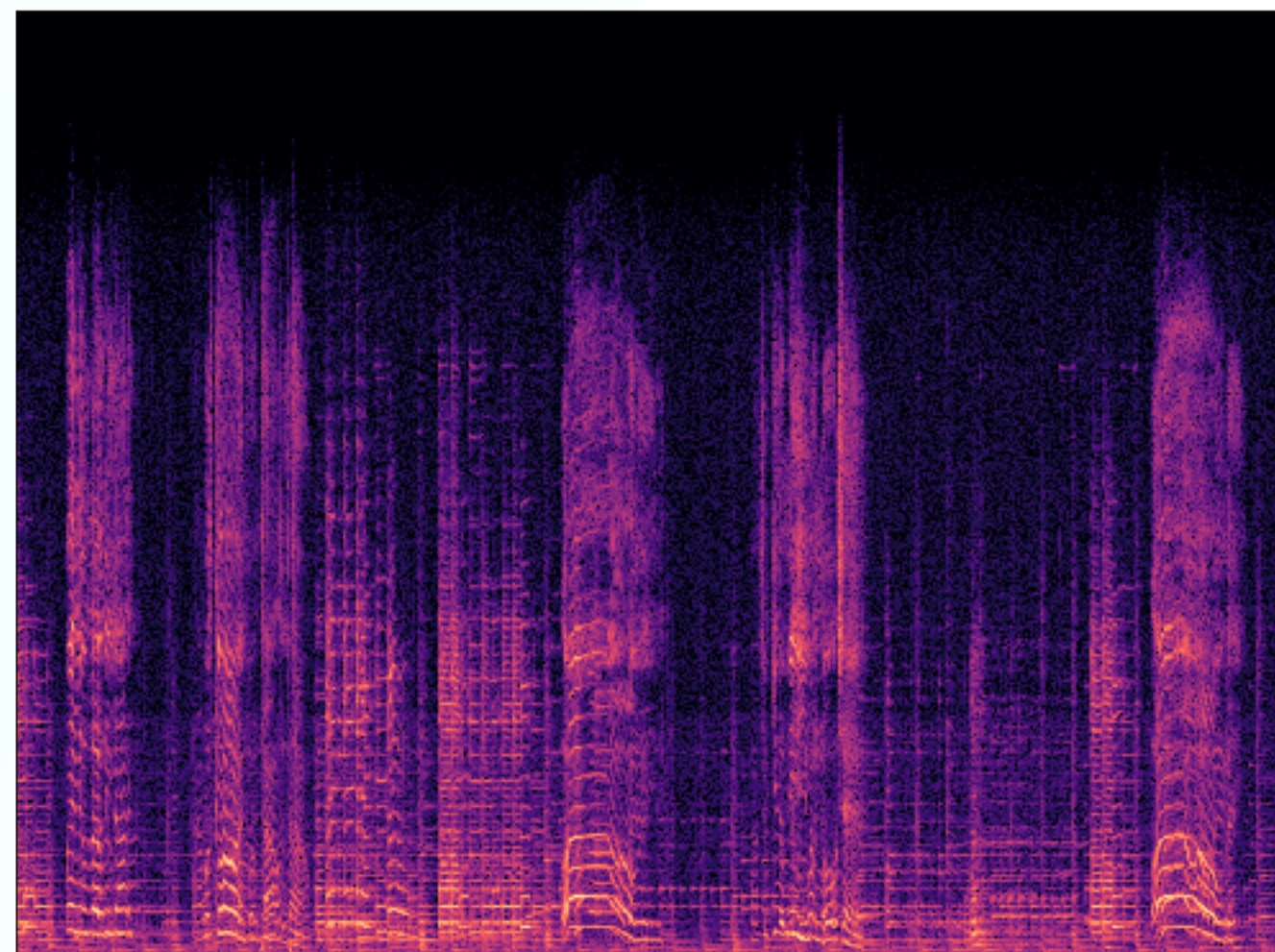
1000 songs split across 10 genres

Text Based Representation

Mel Spectrograph

Top 5000 most popular albums

filename	length	chroma_stft_mean	chroma_stft_var	rms_mean	rms_var	spectral_centroid_mean	spectral_centroid_var
rock.00028.wav	661794	0.4428023099899290	0.07969550043344500	0.13885585963726000	0.0008770713466219600	2046.7124171448200	353783.67086955400



ML Model Benchmark



Random Forest

```
Accuracy: 0.815
Classification Report:

```

	precision	recall	f1-score	support
blues	0.85	0.85	0.85	20
classical	0.81	0.96	0.88	23
country	0.84	0.88	0.86	24
disco	0.75	0.90	0.82	20
hiphop	0.93	0.74	0.82	19
jazz	0.72	0.65	0.68	20
metal	0.95	0.95	0.95	20
pop	0.83	0.83	0.83	18
reggae	0.81	0.81	0.81	16
rock	0.65	0.55	0.59	20
accuracy			0.81	200
macro avg	0.82	0.81	0.81	200
weighted avg	0.82	0.81	0.81	200

Accuracy:

82% Random Forest

58% Decision Tree

35% Logistic Regression

29% K-Nearest Neighbor

24% SVM

10% Random Guess

Decision Tree / Random Forest poorly identify Rock

All models good at identifying Classical

Feed Forward Network



Pre-processed :

The features are standardized.

Input layers:

The model consists of an input layer with 128 neurons, followed by two hidden layers with 64 and 32 neurons, all using the ReLU activation function.

The output layer:

Equal to the number of classes (10), using softmax activation function for multi-class classification.

Training:

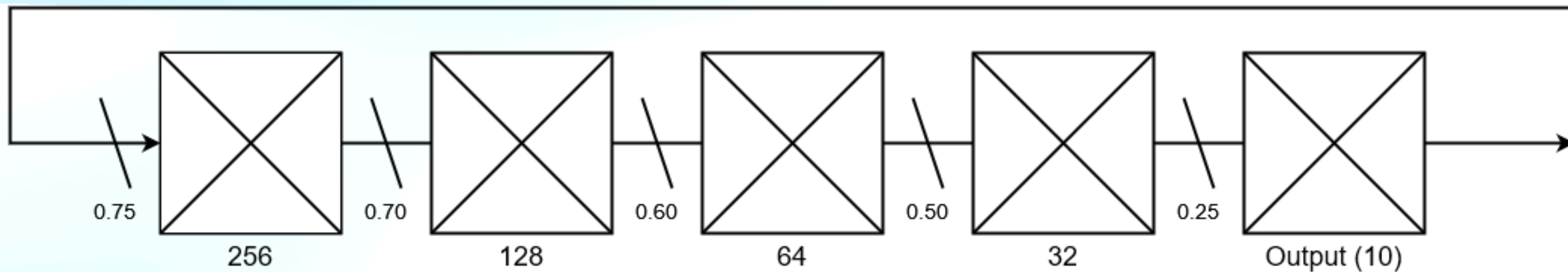
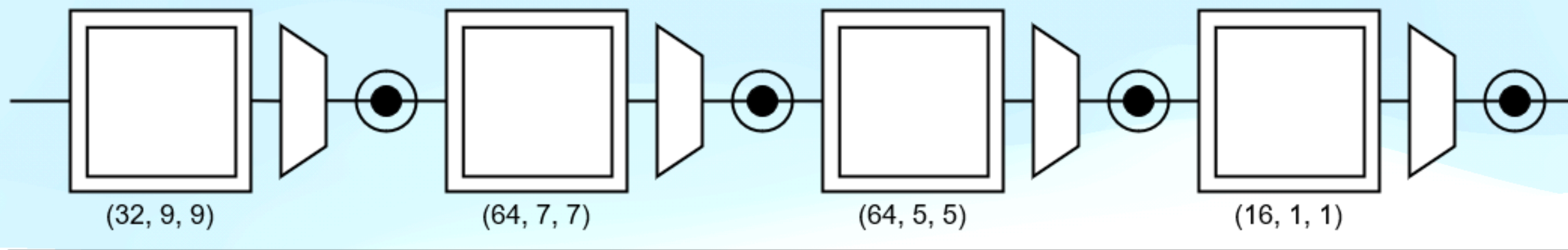
10 epochs, a batch size of 32, and a validation split of 20%.

Result:

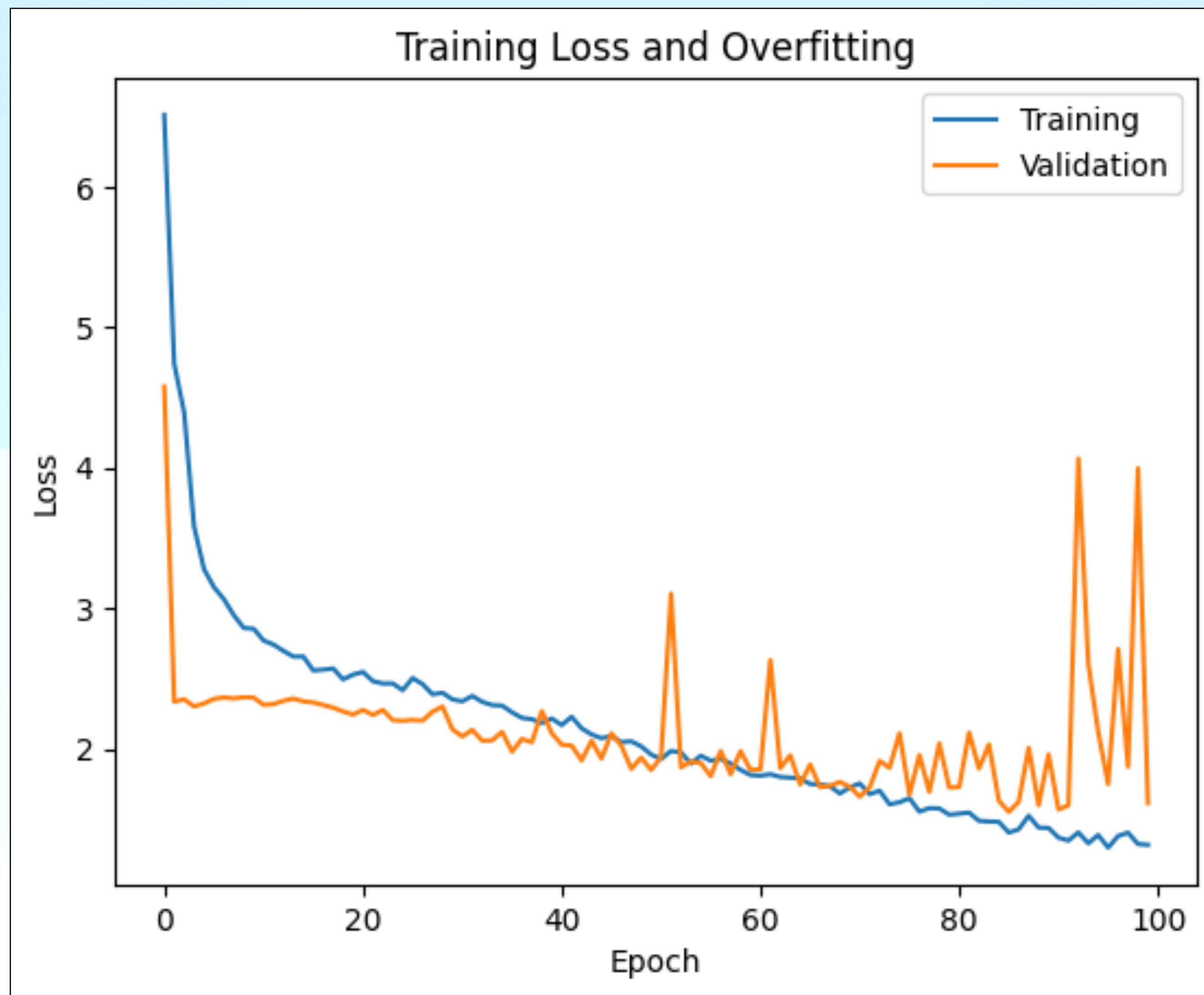
The model achieved a training accuracy of around 85.31% by the end of 10 epochs. The validation accuracy shows an improvement from 36.88% to 66.25%.

The accuracy on the test set is **61.5%**.

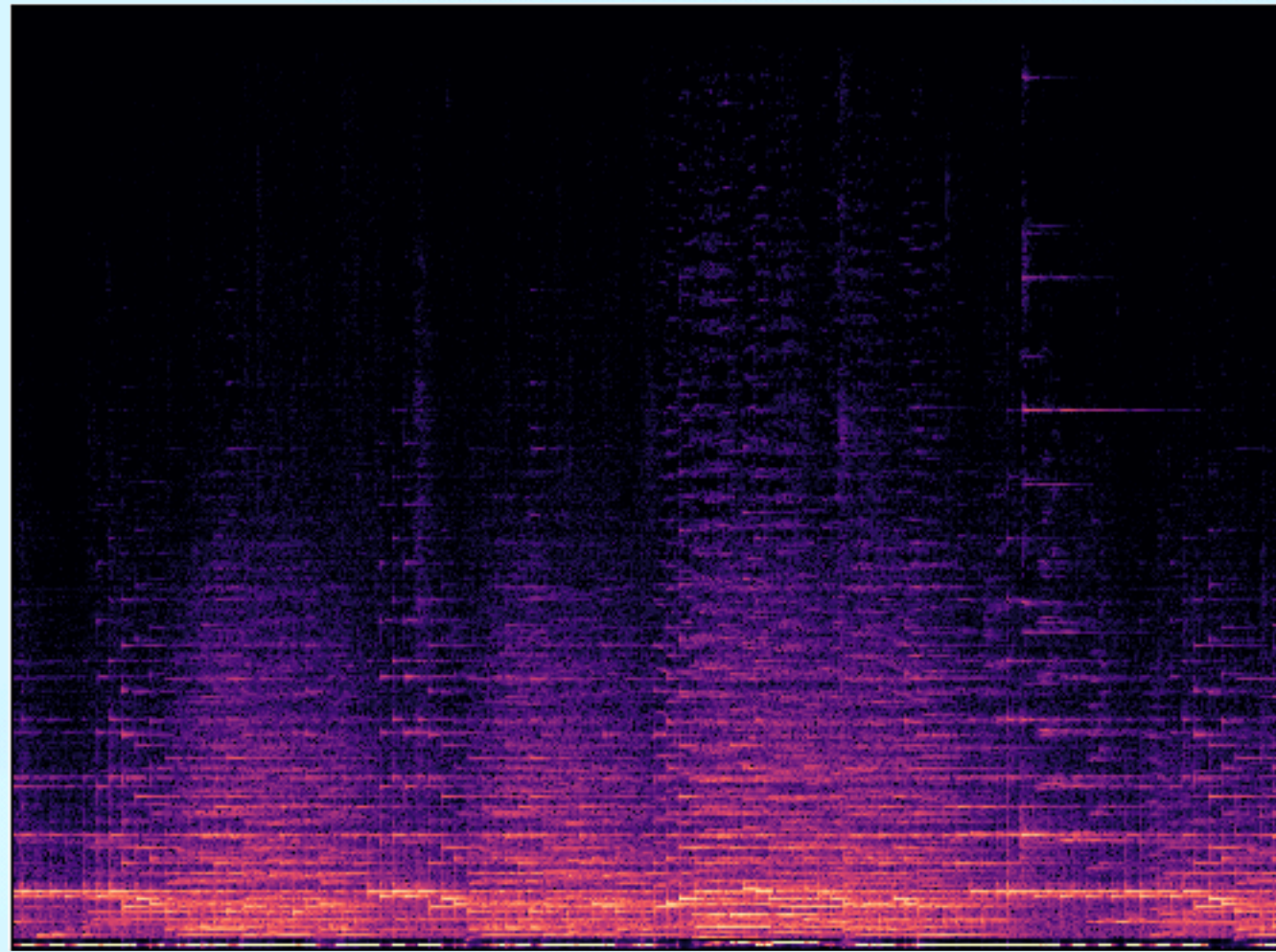
CNN



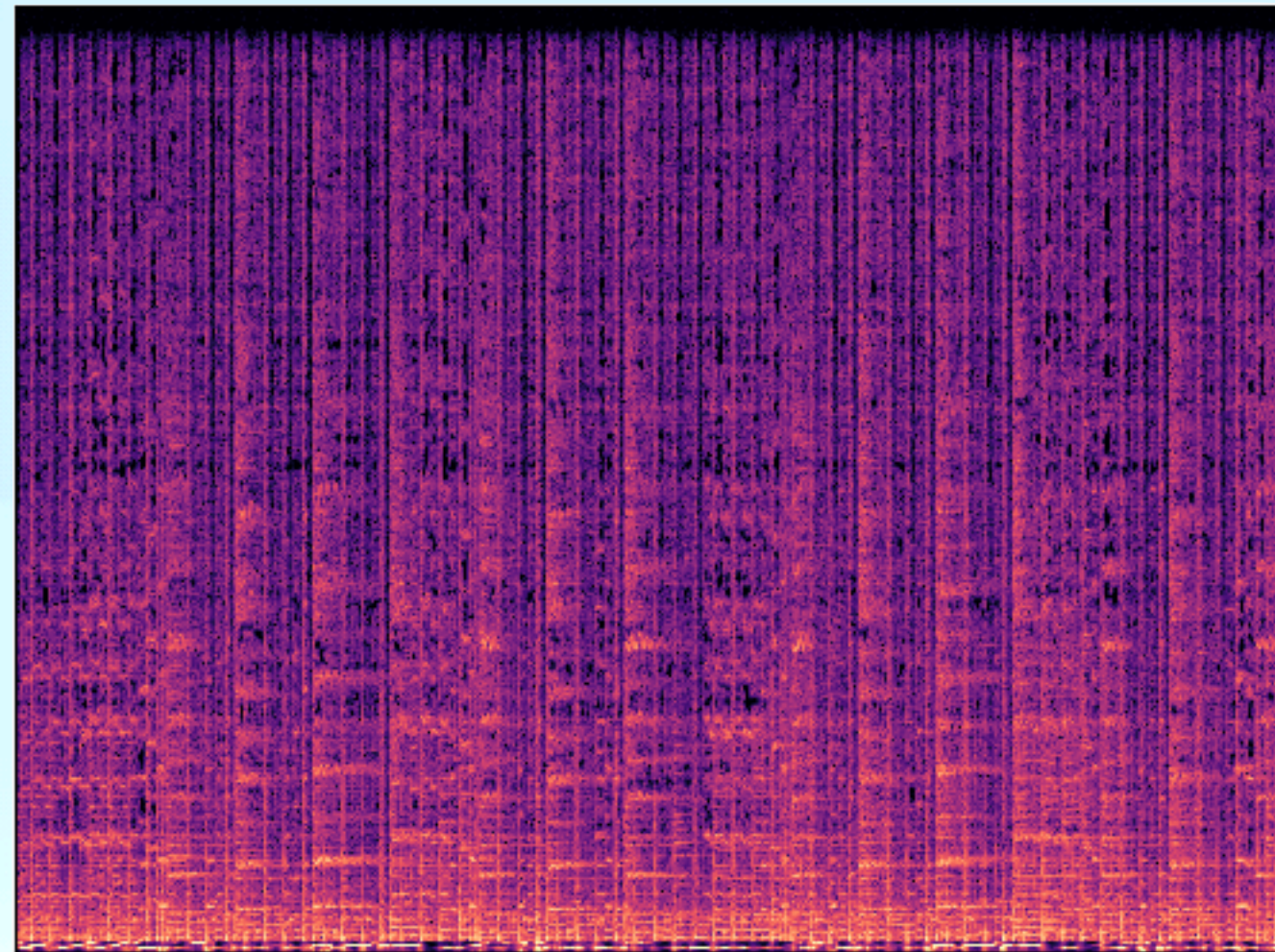
CNN



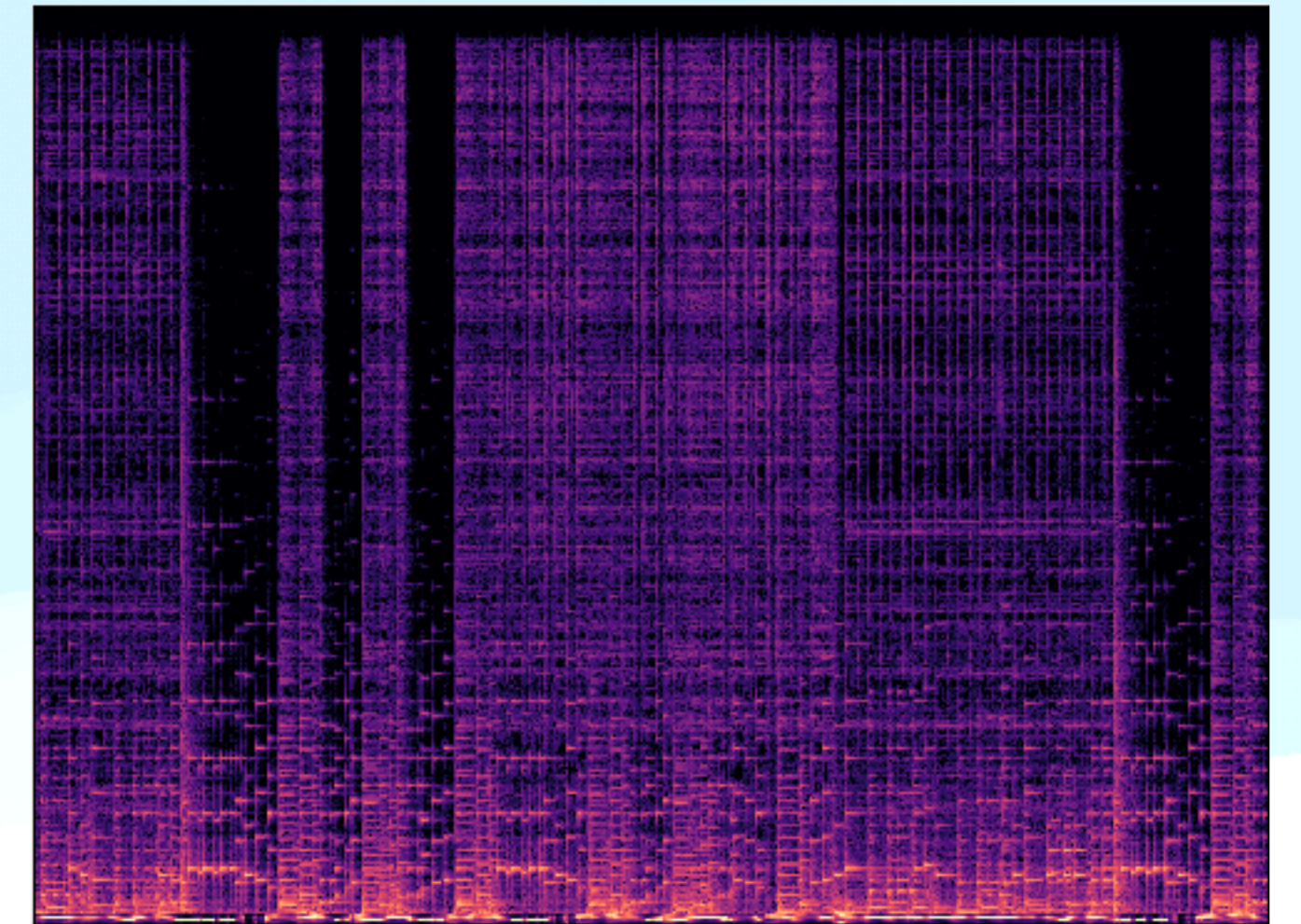
Predictions - Für Elise



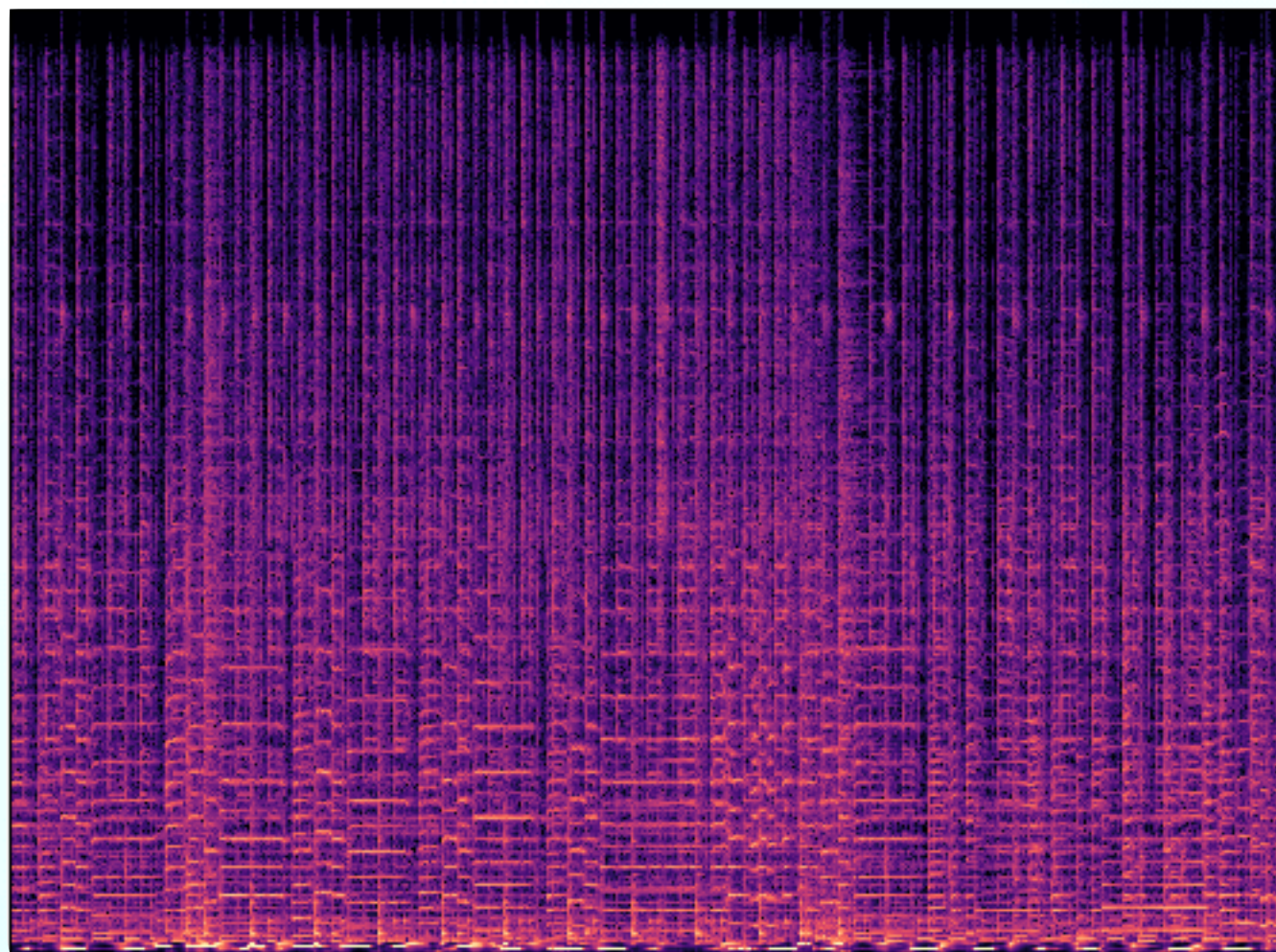
Classical



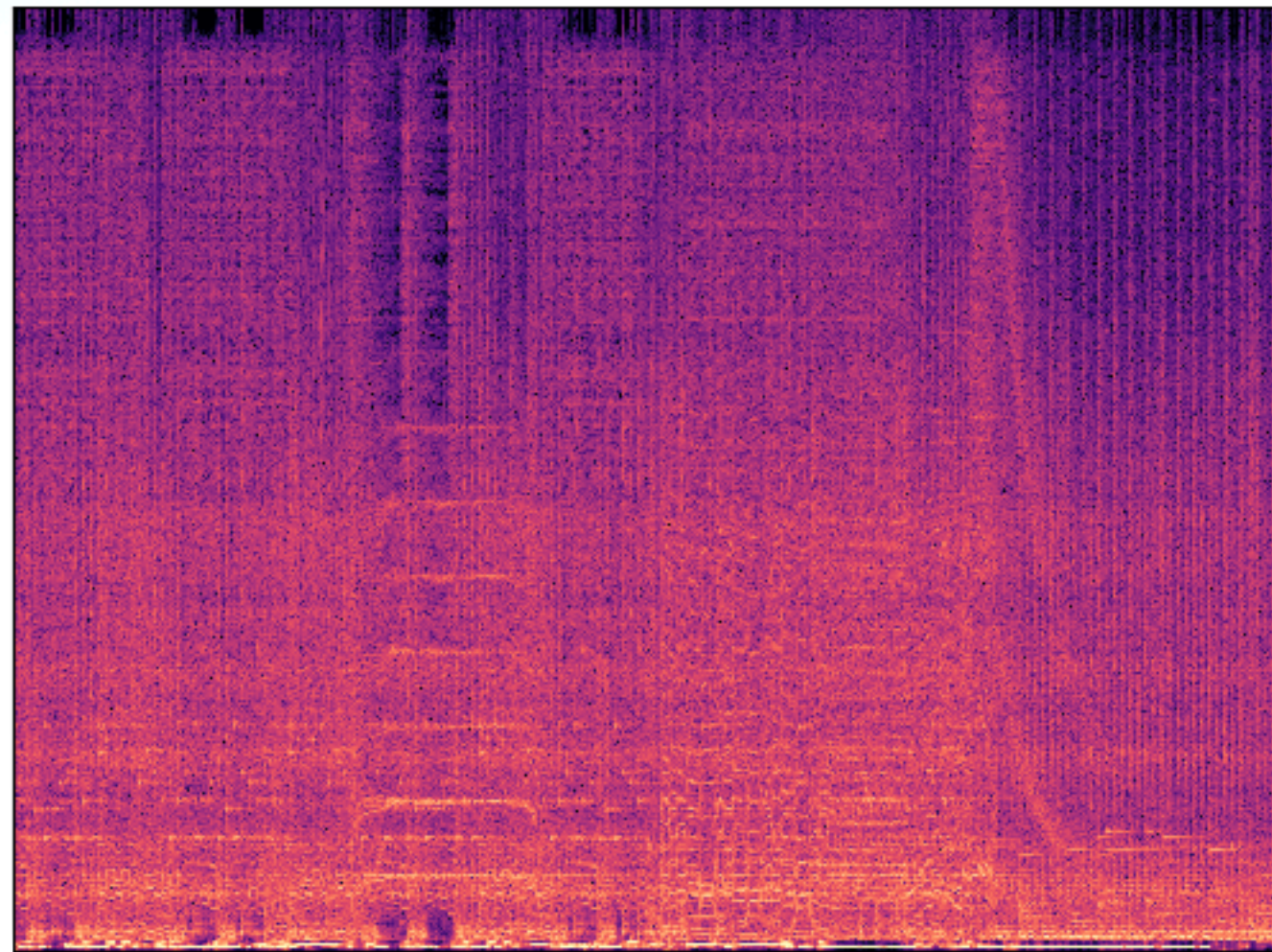
Disco



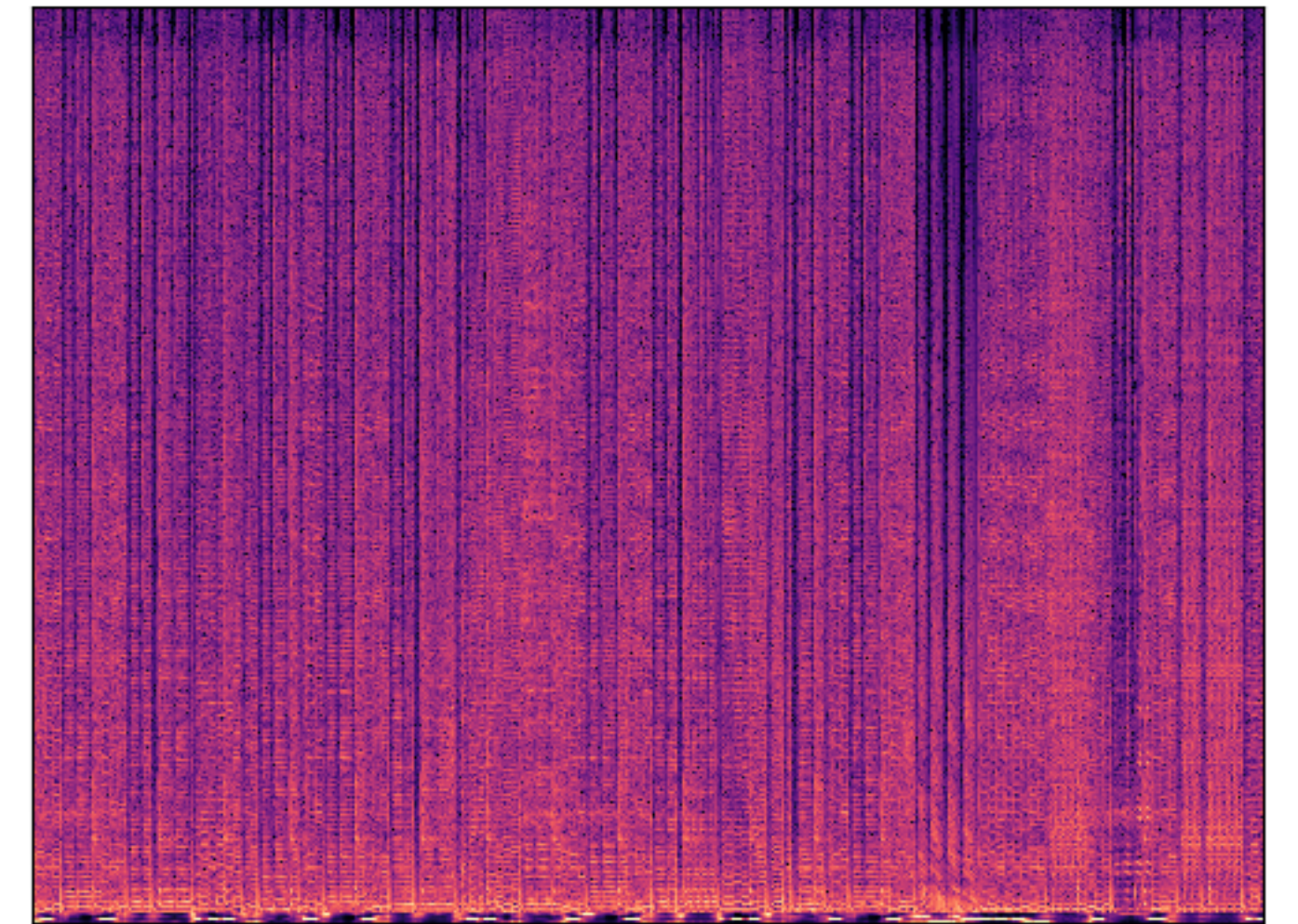
Jazz



Reggae



Metal



Dub Step

Predictions - Für Elise



Highest Probability

	Classical	Disco	Jazz	Reggae	Metal	Blues	Country	Hip Hop	Pop	Rock
Classical	61%									
Disco		34%								
Jazz								44%		
Reggae				85%						
Metal					93%					
Dub Step									59%	

Values rounded to nearest whole percentage

Predictions - Für Elise



Top Two Probabilities

	Classical	Disco	Jazz	Reggae	Metal	Blues	Country	Hip Hop	Pop	Rock
Classical	61%		12%							
Disco		34%							27%	
Jazz			32%					44%		
Reggae				85%				13%		
Metal					93%					4%
Dub Step								25%	59%	

Values rounded to nearest whole percentage

Predictions - Für Elise



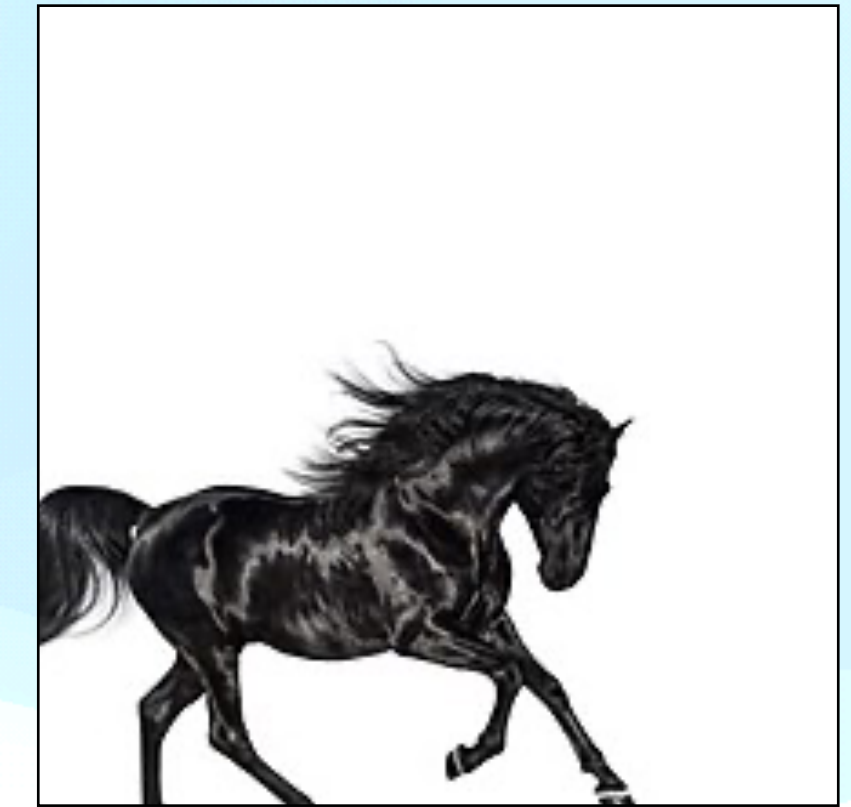
All Probabilities

	Classical	Disco	Jazz	Reggae	Metal	Blues	Country	Hip Hop	Pop	Rock
Classical	61%	12%	12%	0%	1%	6%	4%	0%	1%	3%
Disco	0%	34%	1%	1%	1%	2%	9%	3%	27%	19%
Jazz	0%	5%	32%	0%	0%	5%	3%	44%	2%	5%
Reggae	0%	0%	0%	85%	0%	0%	0%	13%	0%	0%
Metal	0%	1%	0%	0%	93%	0%	0%	0%	0%	4%
Dub Step	0%	1%	0%	12%	2%	0%	0%	25%	59%	0%

Values rounded to nearest whole percentage



Predictions



Money
Dark Side of the Moon
Pink Floyd

Back in Black
Back in Black
AC/DC

Copacabana
Even Now
Barry Manilow

(Ghost) Riders In The Sky
American Outlaws (Live)
The Highwaymen

Mundian To Bach Ke
Legalised
Panjabi MC

Old Town Road
Old Town Road
Lil Nas X

ANN:
Disco (33%)
Rock (29%)

ANN:
Metal (38%)
Rock (31%)

ANN:
Disco (48%)
Pop (25%)

ANN:
Rock (39%)
Disco (32%)

ANN:
Hip Hop (94%)
Reggae (4%)

ANN:
Pop (45%)
Hip Hop (25%)

Our Opinion:
Blues

Our Opinion:
Metal

Our Opinion:
Disco

Our Opinion:
Country

Our Opinion:
Hip Hop

Our Opinion:
Hip Hop

Wikipedia:
Progress Rock
Blues Rock
Hard Rock

Wikipedia:
Hard Rock
Heavy Metal
Arena Rock

Wikipedia:
Disco
Tropical

Wikipedia:
Country

Wikipedia:
Bhangra
Alternative Hip Hop

Wikipedia:
Country Rap
Country Trap
Southern Hip Hop
Pop

Recommendations



GhostRiders is most likely rock (39%) or disco (32%)

If you like this song, give these albums a try

Wish You Were Here by Pink Floyd

OK Computer by Radiohead

The Dark Side of the Moon by Pink Floyd

Here are some more options

Since I Left You by The Avalanches

Thriller by Michael Jackson

Money is most likely disco (33%) or rock (29%)

If you like this song, give these albums a try

Since I Left You by The Avalanches

Thriller by Michael Jackson

Here are some more options

Wish You Were Here by Pink Floyd

OK Computer by Radiohead

The Dark Side of the Moon by Pink Floyd

Here are some deeper cuts

Discovery by Daft Punk

FurElise-DubStep is most likely pop (59%) or hiphop (25%)

If you like this song, give these albums a try

The Rise and Fall of Ziggy Stardust and the Spiders

Loveless by My Bloody Valentine

Here are some more options

To Pimp a Butterfly by Kendrick Lamar

My Beautiful Dark Twisted Fantasy by Kanye West

Here are some deeper cuts

Abbey Road by The Beatles

FurElise-Metal is most likely metal (93%) or rock (4%)

If you like this song, give these albums a try

Paranoid by Black Sabbath

St. Anger by Metallica

Here are some more options

Wish You Were Here by Pink Floyd

OK Computer by Radiohead

The Dark Side of the Moon by Pink Floyd