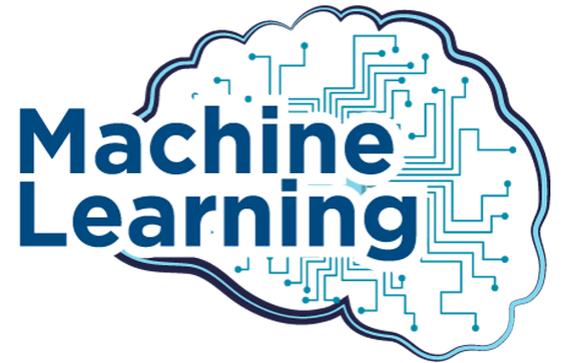


ERAS:
Emotion
Recognition of
Audio Signals

Cos'è ERAS?

Diamogli una semplice definizione!

ERAS è un **AI** capace di **predire**
le **emozioni** che la **musica** ci
fa provare!



2.

Problematica

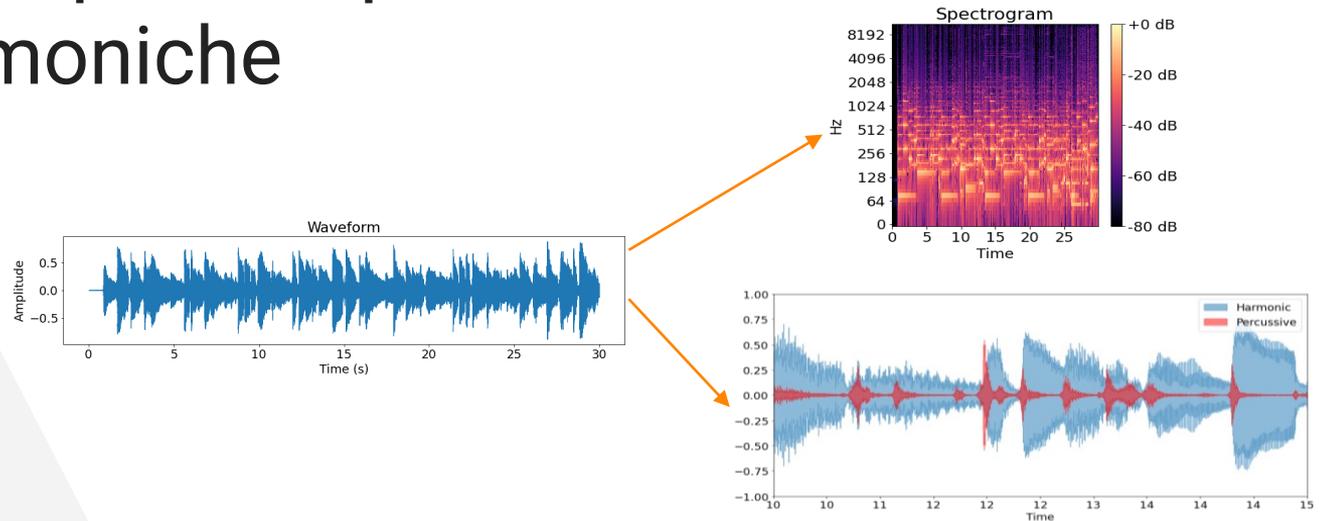
Qual è la difficoltà in ciò?

Problematica: percezione umana

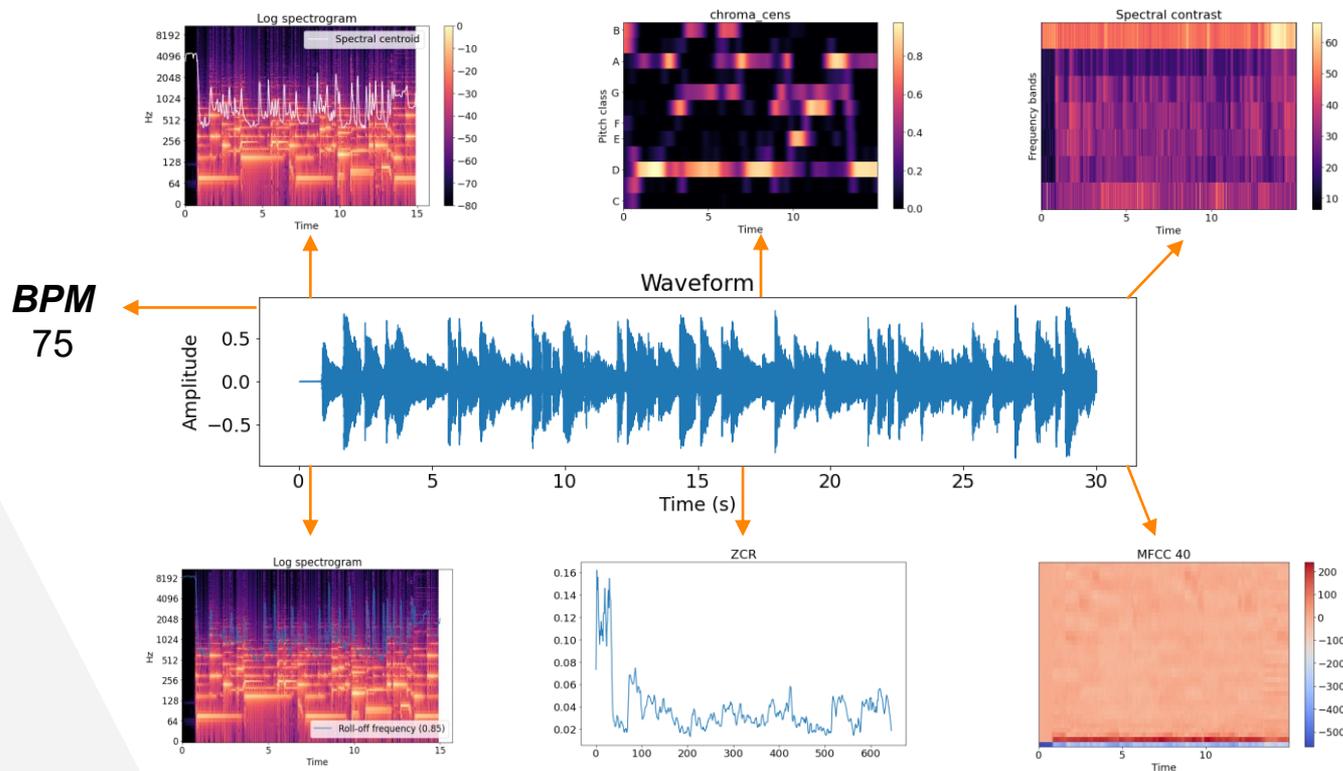


Problematica: componenti segnale audio

- ▶ Trasformata di Fourier
- ▶ Componenti percussive & armoniche



Problematica: features audio



3.

Dataset

Creazione del dataset

Dataset: Youtube Audio Library

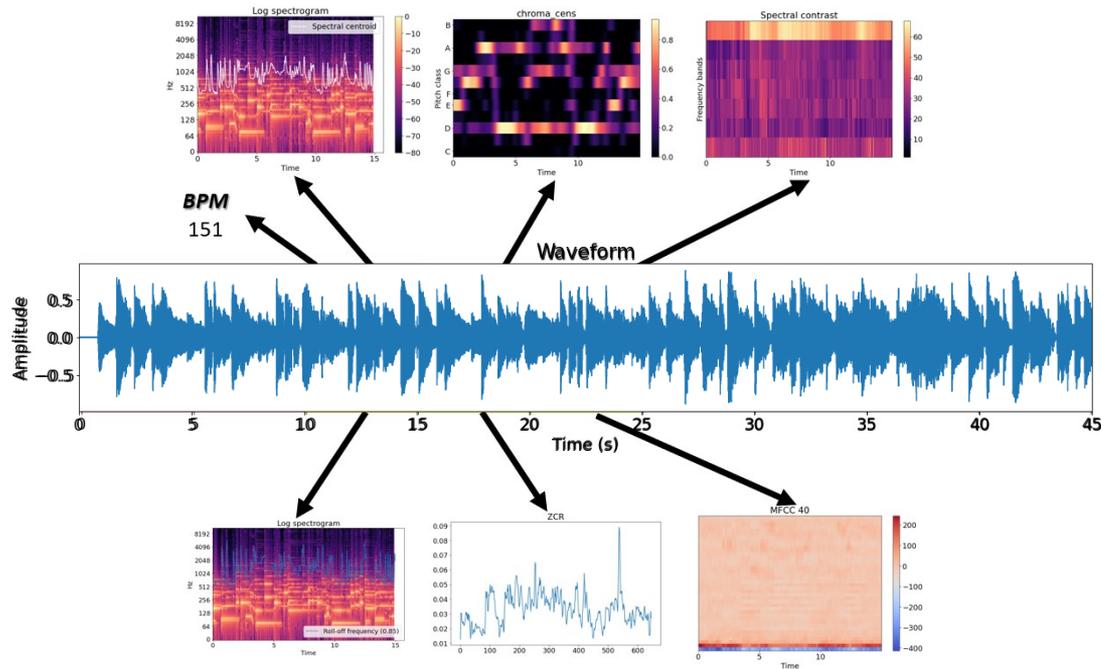
Vantaggi:

- ▶ Free royalty music
- ▶ Divise per emozioni
- ▶ Grande quantità



Dataset: Estrazione features

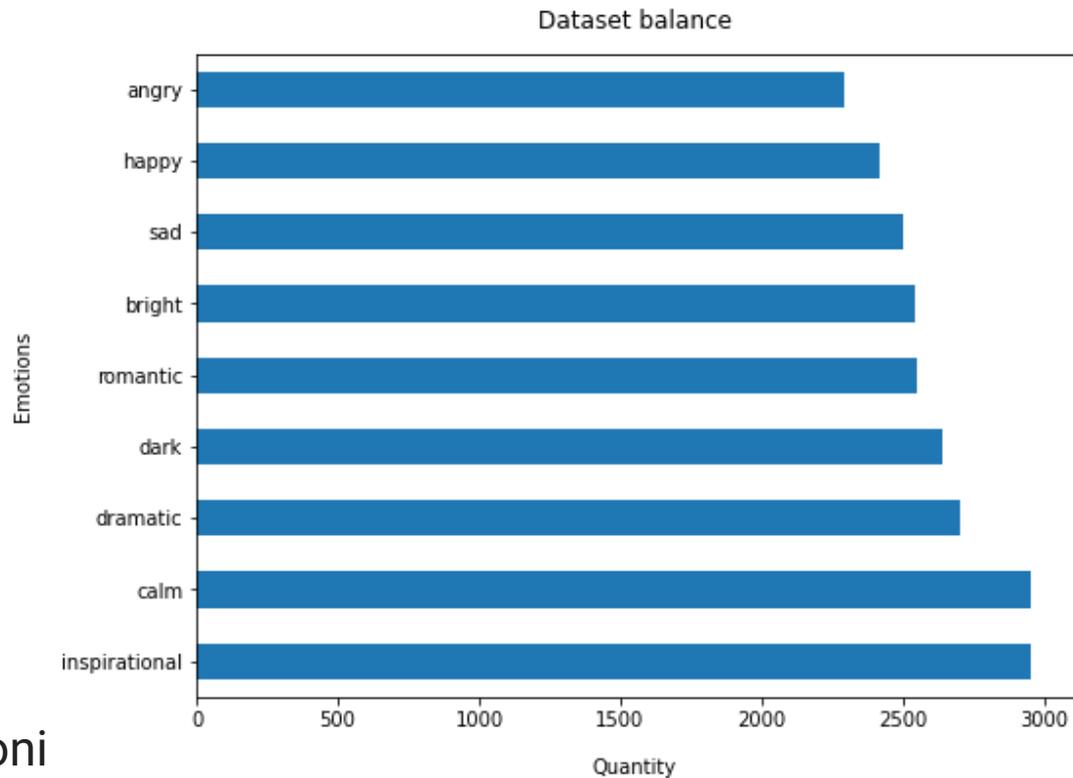
Finestra: 15s
Salto: 10s



24,088
Numero di samples

128
Features

9
Emozioni



4.

Approccio

Step di sviluppo usati

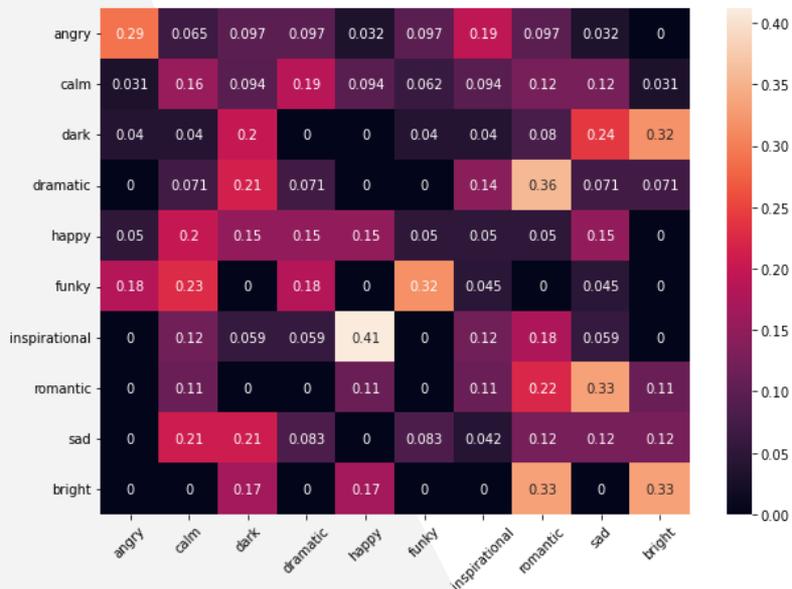
Approccio: tabella riassuntiva

| Attempt | Features | N° of features | Audio's seconds | F1 macro scores | Notes |
|---------|---|----------------|-----------------------------------|------------------------------------|------------------------------------|
| 1st | chroma stft, rmse, spectral centroid, spectral bandwidth, rolloff, zer, MFCCs 13 | 26 | 30s | SVC: 21% KNN: 19% | Lack of features and samples |
| 2nd | Spectral Chroma, MFCCs 13, Spectral Centroid, Spectral Contrast, Spectral Rolloff, ZCR, BPM | 74 | Whole track duration | SVC: 26% KNN: 21% | Lack of samples |
| 3rd | Spectral Chroma, Mfecs 13, Spectral Centroid, Spectral Contrast, Spectral Rolloff, ZCR, BPM | 74 | Window size: 15s Hop size: 10s | SVC: 77% KNN: 90% | Check the dataset & model validity |
| Val. | Spectral Chroma, Mfecs 13, Spectral Centroid, Spectral Contrast, Spectral Rolloff, ZCR, BPM | 74 | Window size: 15s Hop size: 10s | KNN k-cross validation: 89% | / |
| Final | Spectral Chroma, Mfecs 40, Spectral Centroid, Spectral Contrast, Spectral Rolloff, ZCR, BPM | 128 | Window size: 15s Hop size: 10s | KNN k-cross validation: 92% | / |

Table 4.1: Summary table

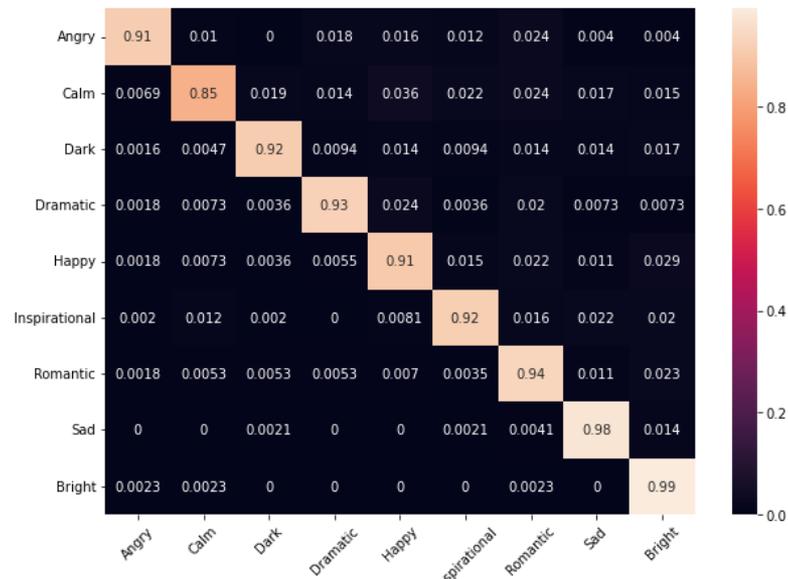
Approccio: matrici di confusione

Primo risultato



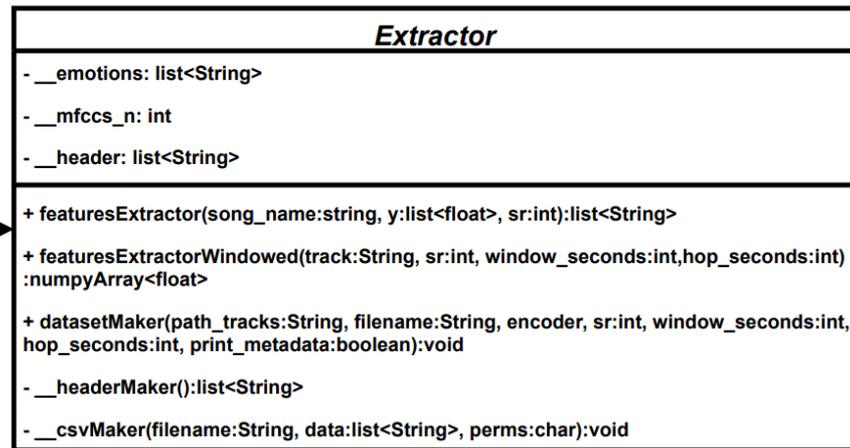
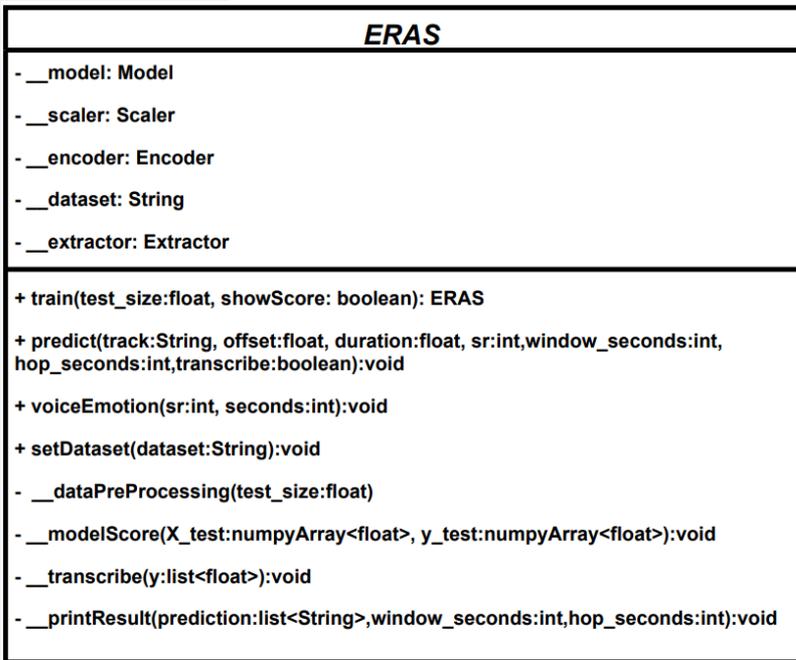
F1 Macro Score: 19%

Risultato finale

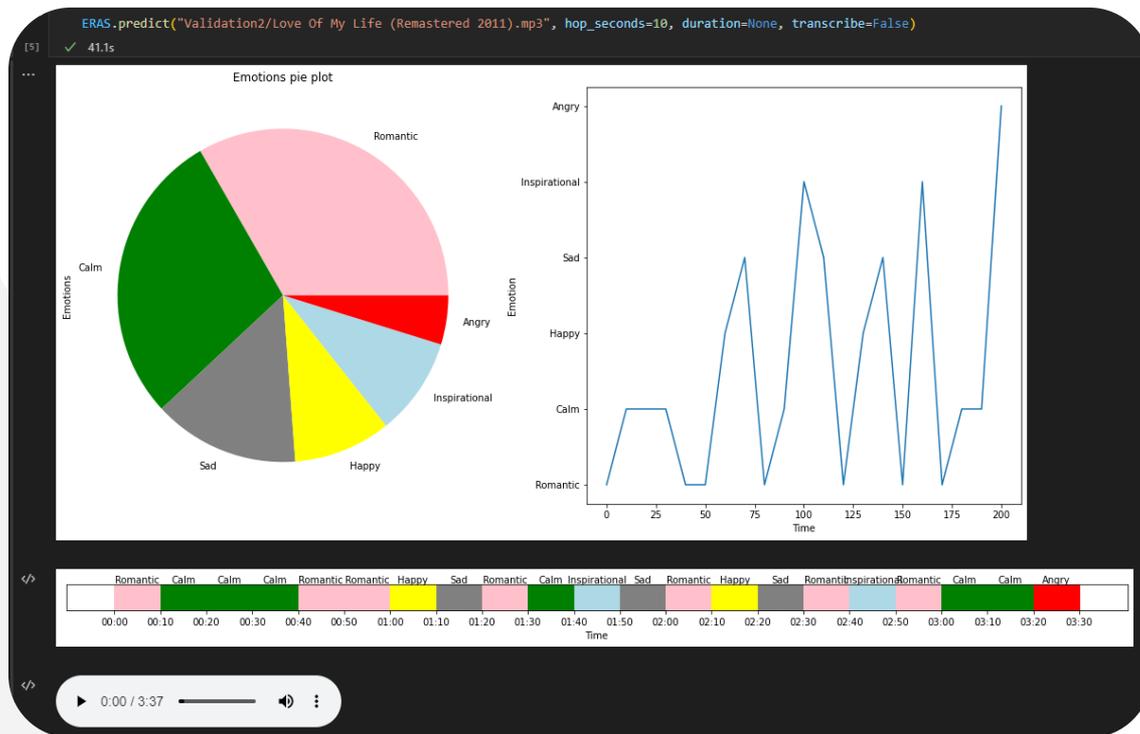


F1 Macro Score: 92%

Approccio: descrizione architettura

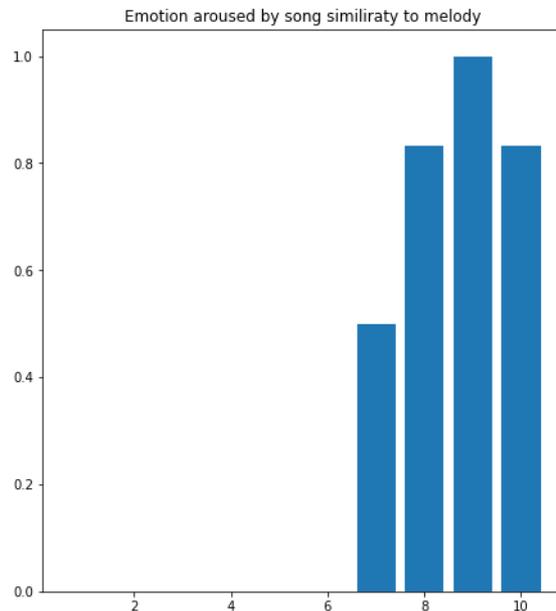
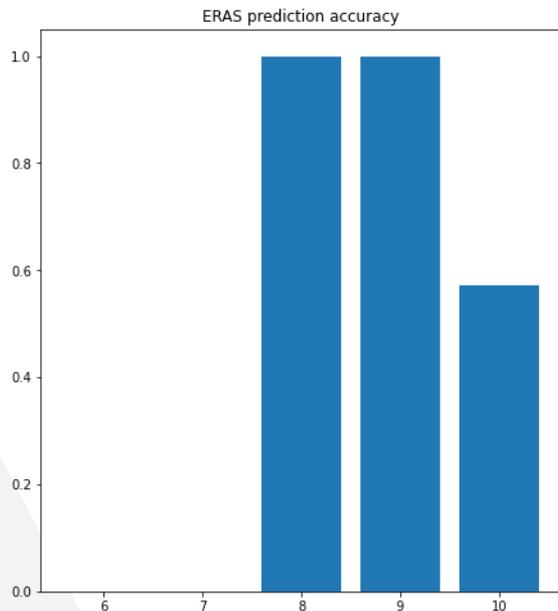


ERAS: esempio di utilizzo





Google Forms



85%

Correttezza

81%

Melodia vs Testo

28

Persone

Grazie mille per
l'attenzione!