

# Prepoznavanje ugođaja pjesama

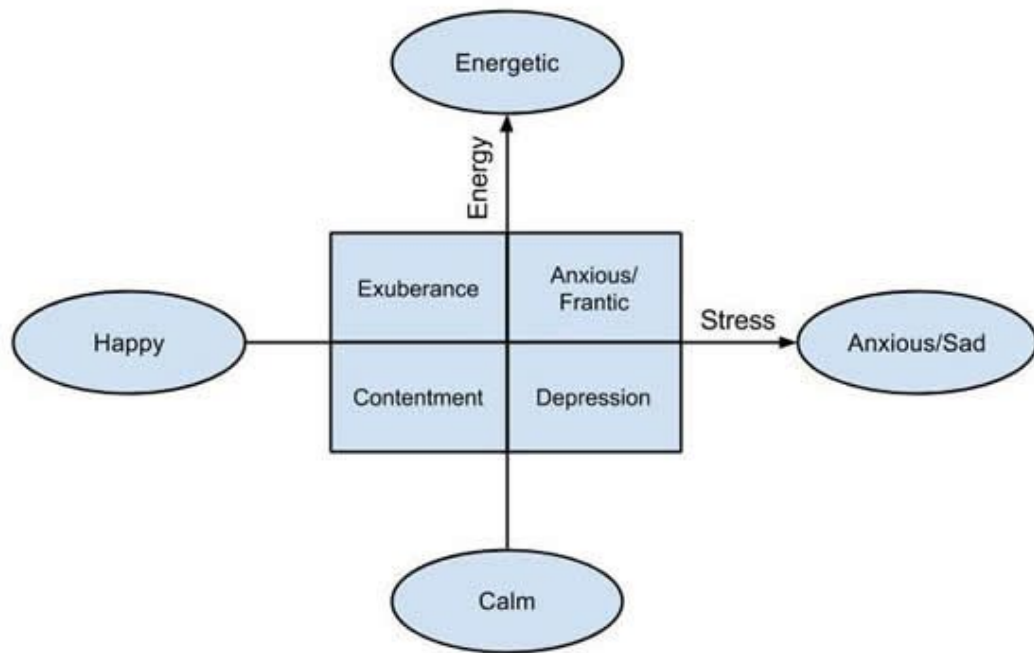
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# Motivacija

- analiziranje pjesama
- primjena:
  - sustavi za preporuke
- značajke pjesme

# Opis problema

- prepoznavanje ugođaja pjesme
- kategorije:  
sretno/tužno, mirno/energično
- postojeća istraživanja



# Analiza zvučnog zapisa

- Spotify API

	popularity	length	danceability	acousticness	energy	instrumentalness	liveness	valence	loudness	speechiness	tempo	key	time_signature
mood													
Calm	40.47	193201.170	0.408640	0.882410	0.155783	0.890175	0.117788	0.150011	-20.934005	0.040607	108.892180	5.47	3.760
Energetic	42.42	213207.345	0.538110	0.030978	0.870085	0.124303	0.234581	0.403070	-4.962845	0.076633	130.375665	5.28	3.950
Happy	47.48	222282.345	0.619370	0.109826	0.780095	0.128872	0.220174	0.503411	-6.564875	0.063018	124.692345	5.03	3.970
Sad	37.78	247505.235	0.495431	0.577908	0.390422	0.201679	0.140375	0.286996	-10.542255	0.041858	115.985005	5.56	3.835

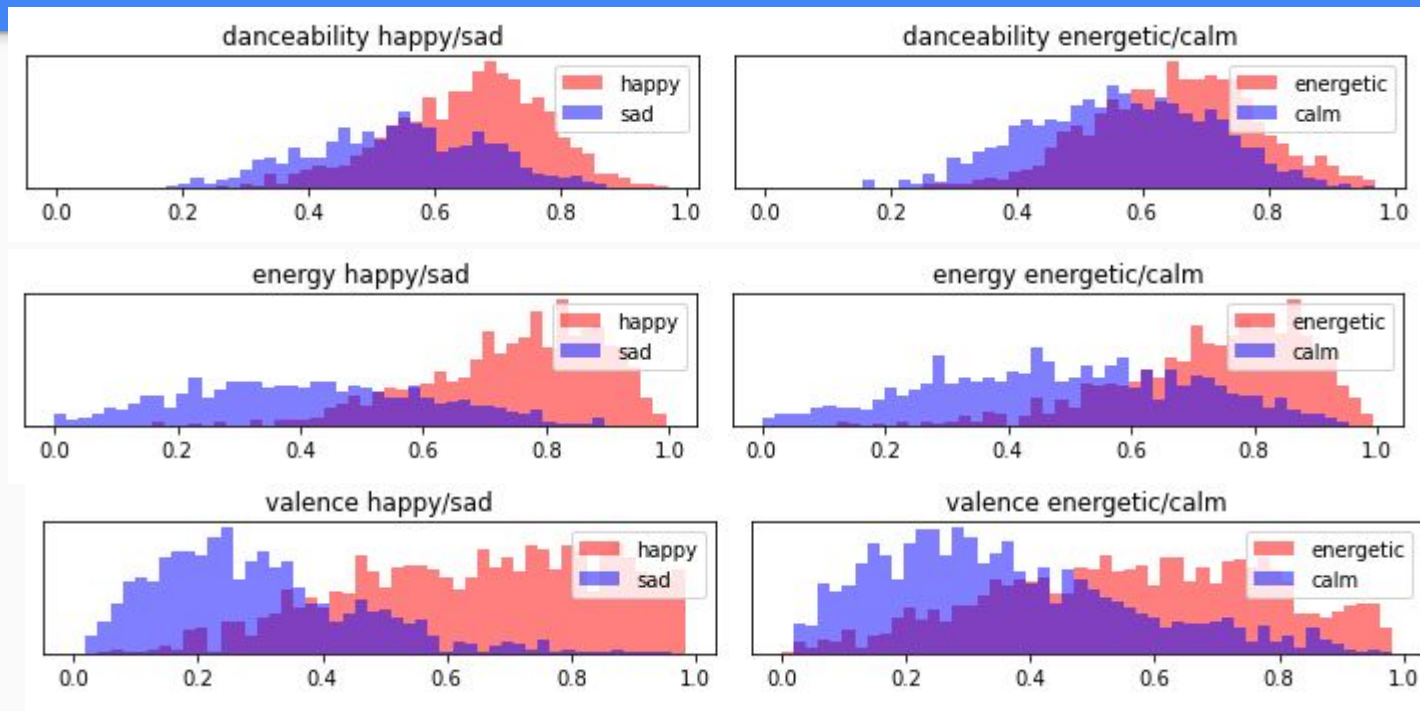
# Prikupljanje podataka

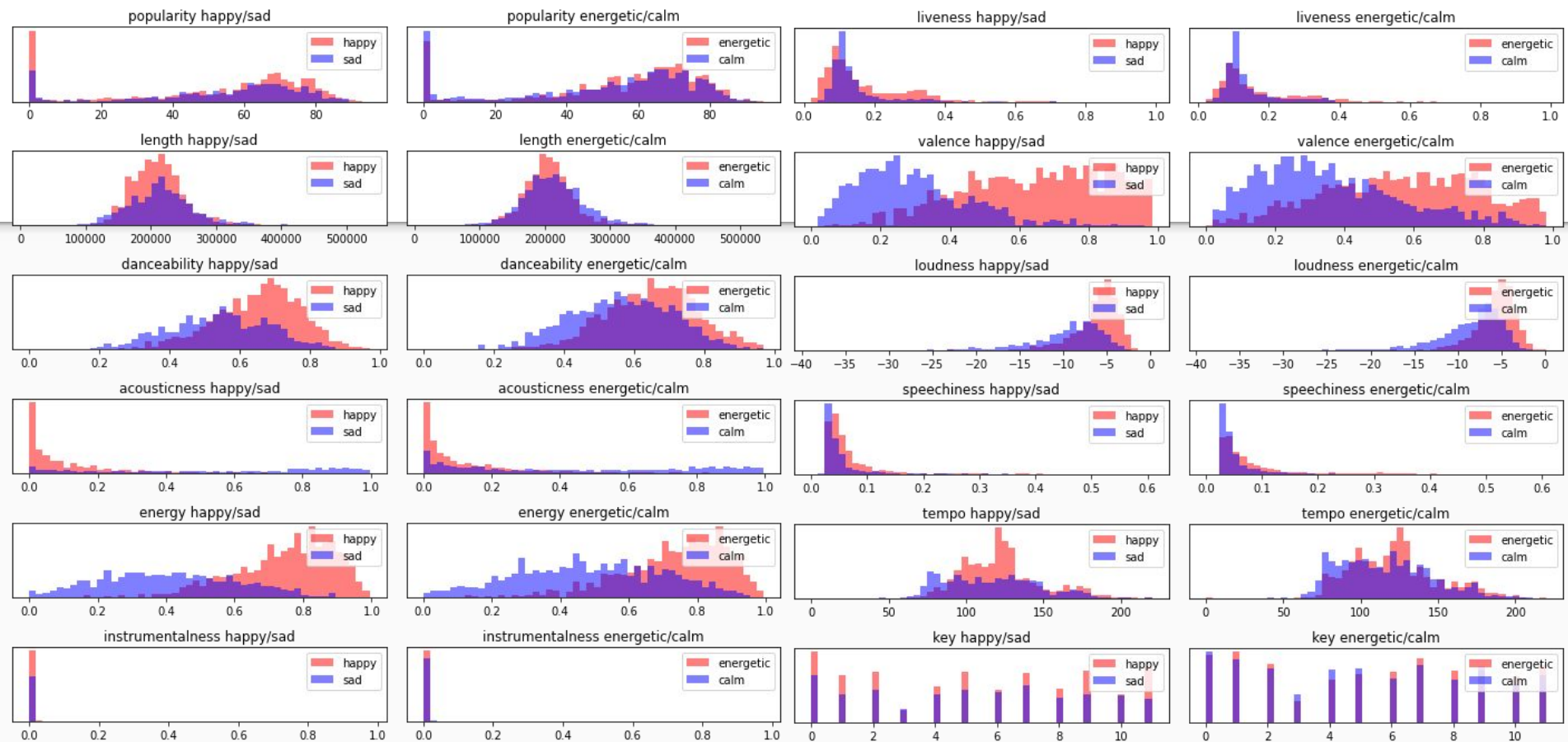
- 10 playlisti za svaku labelu
- Pjesme podijeljene u dva dataseta:
  - energične/mirne
  - sretne/tužne

Kategorija	Broj pjesama
energične	1391
mirne	1345
sretne	1195
tužne	812

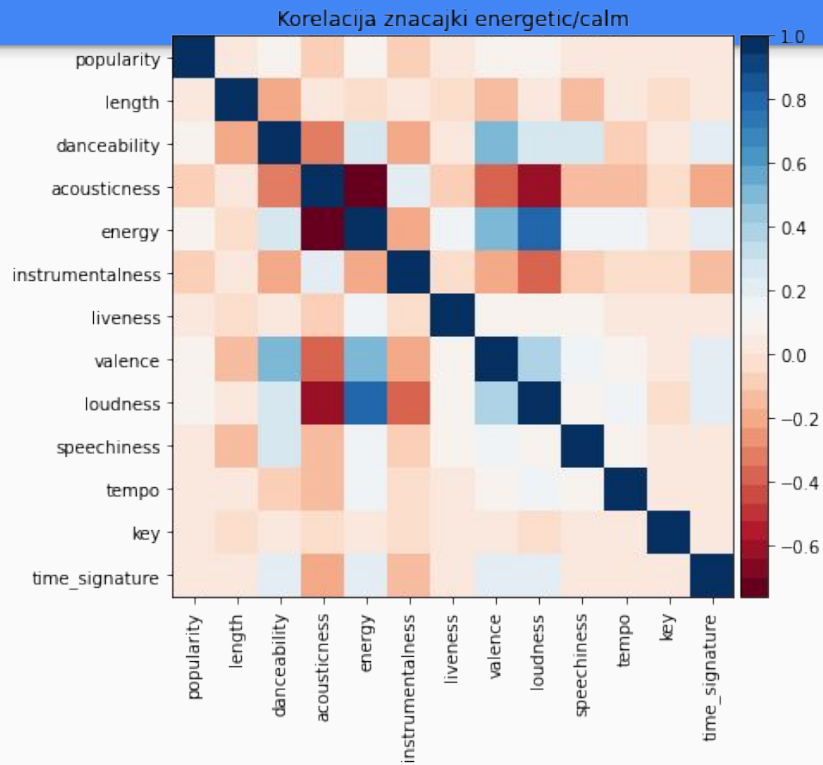
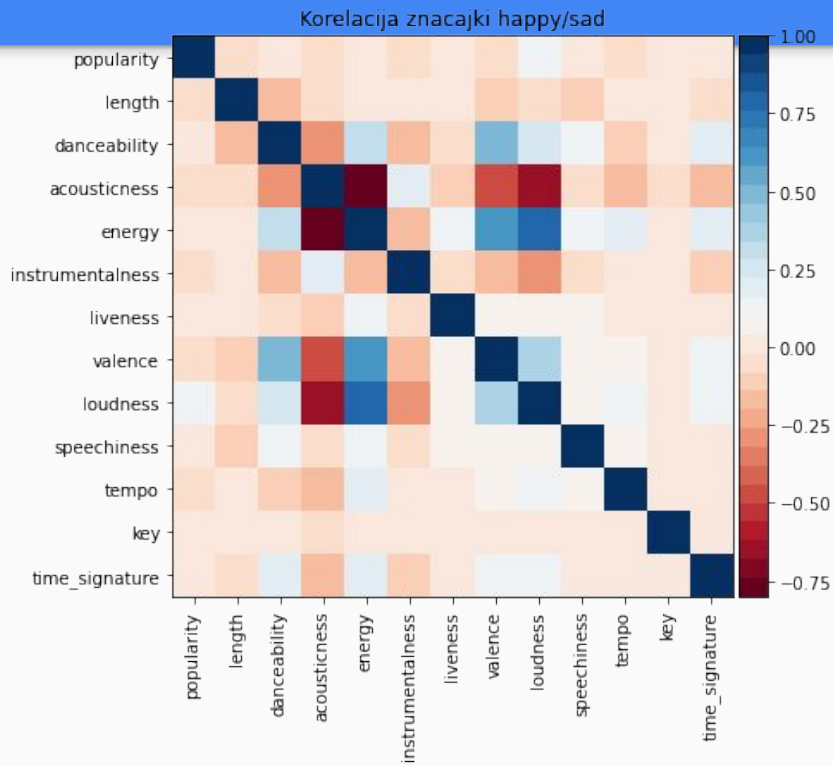
# Distribucija značajki

Neke od  
važnijih  
značajki:





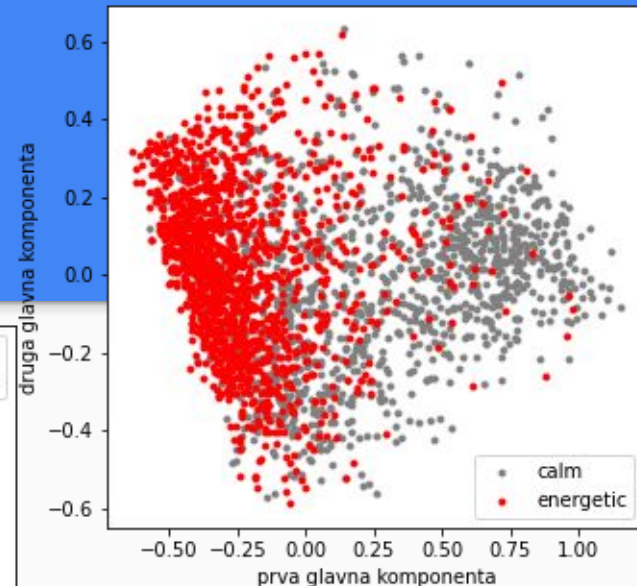
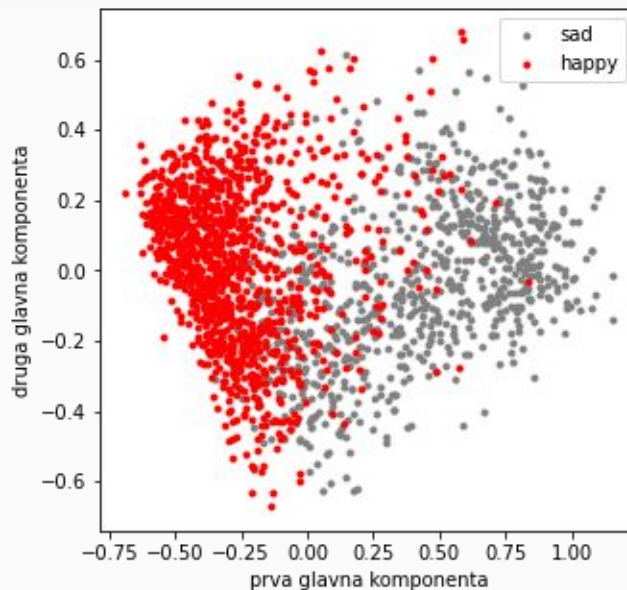
# Korelacija značajki





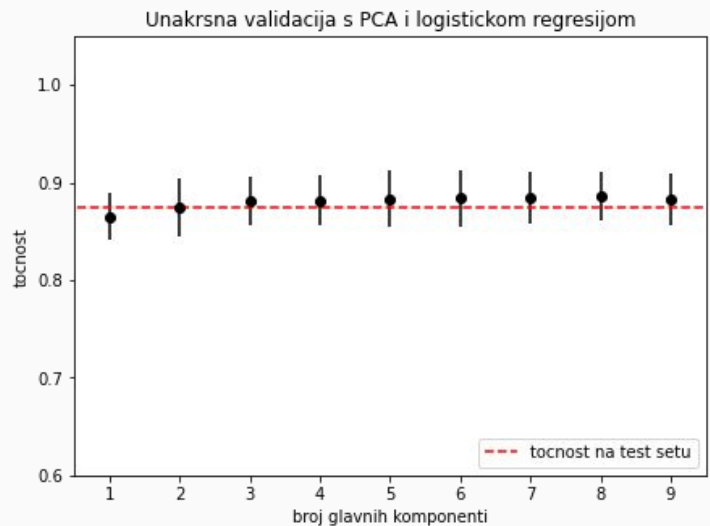
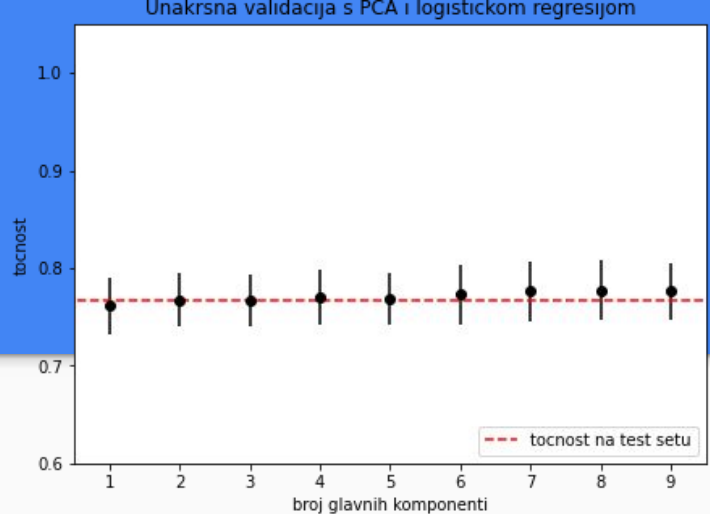
# Razvijanje modela

- 2 različita modela
- MinMaxScaler
- smanjenje dimenzija
  - instrumentalness
  - korelacija značajki
  - PCA

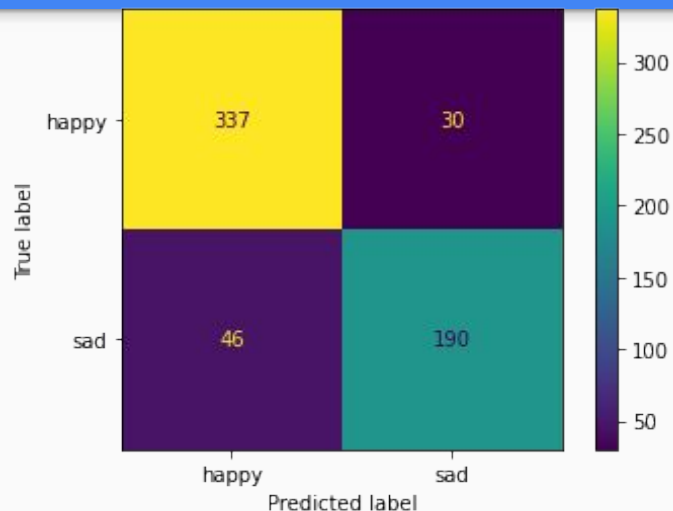


# Model

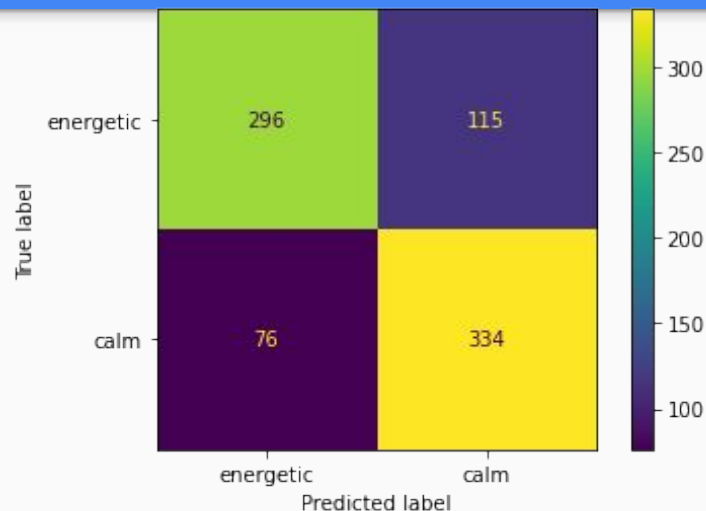
- logistička regresija
  - `sklearn.linear_model.LogisticRegression`
- točnost
  - unakrsna validacija



# Rezultati



- **Preciznost** modela:
  - 88% sretne, 86.3% tužne
  - 80.2% energičen, 74.4% mirne



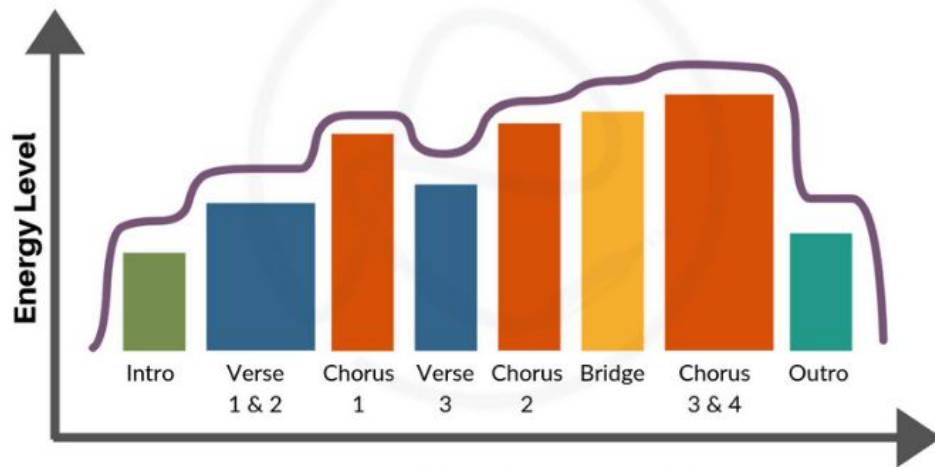
- **Točnost** modela:
  - 87.4% za sretne/tužne
  - 76.7% za energične/mirne

# Diskusija

- usporedba rezultata
- format pjesme
- poboljšanja:
  - dataset
  - analiza po dijelovima
- analiza teksta
- kvaliteta podataka



## Energy Levels of Different Sections of a Typical Pop Song



# Literatura

- Predicting the Music Mood of a Song with Deep Learning
- Machine Learning Approaches for Mood Classification of Songs toward Music Search Engine
- Music Mood Classification