Lyrics generation

Text Mining Project

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Contents

- Sentiment Analysis
- Basic N-gram model
- Word-based LSTM model
- Character-based LSTM model
- GPT-2 model
- Evaluation of the songs
- Limitations

Sentiment Analysis

- Extra Parameter
- Poetry
- Data Sets
- BERT[1]
- Line by line
- Binary sentiment

1) Devlin, Jacob & Chang, Ming-Wei & Lee, Kenton & Toutanova, Kristina. (2018). BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding.

Basic N-gram model

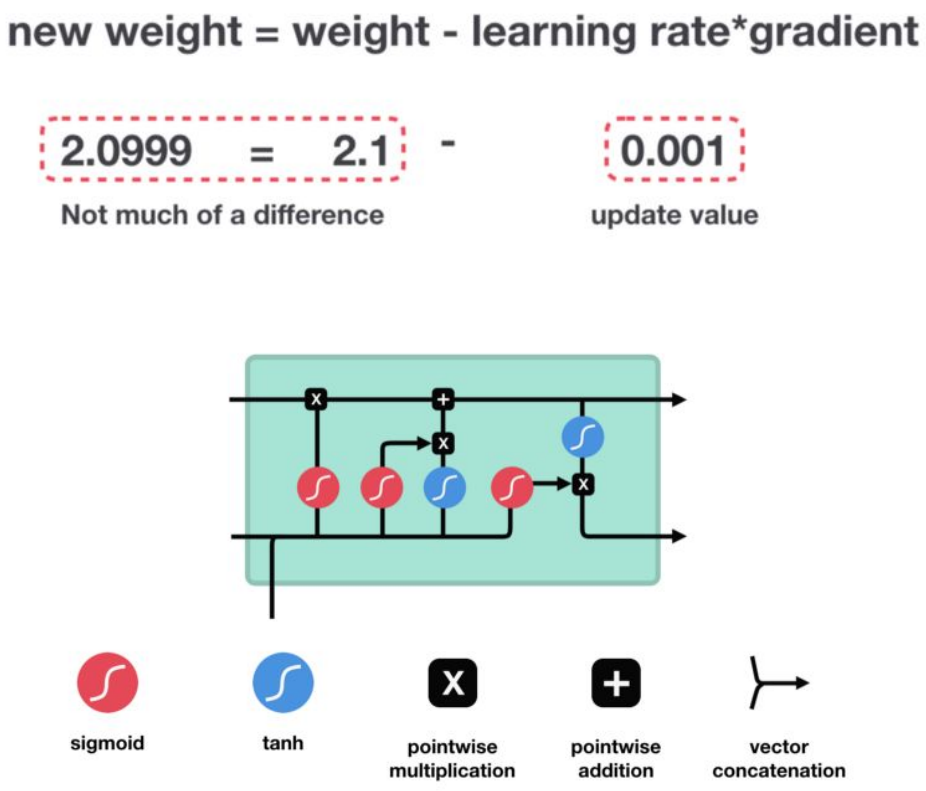
- Tri-gram
- Genre and Sentiment
- Probability Distribution
- Dictionary / Json
- Top-k sampling
- K-value (15)

NEGATIVE
i want to let go of time
i'm gonna get it girl
i am a poor woman living on a sunny day you'll be there
when you'd be the one i care for you
when you call me
you can be
you're going down
get it get down
when the world is full of
my first love again
so why don't you think your tears when she dance when you see me cry
you know what you want it want to
you don't let the good times are hard to forget you !'
so if you don't you want me
i'll never see you
i'ma need a friend
he's a good girl down girl
and i am
you can't let you go hmm
you've got my hands
and you'll have to let it go
i'm a freak of the day that i'm not gonna sleep tonight

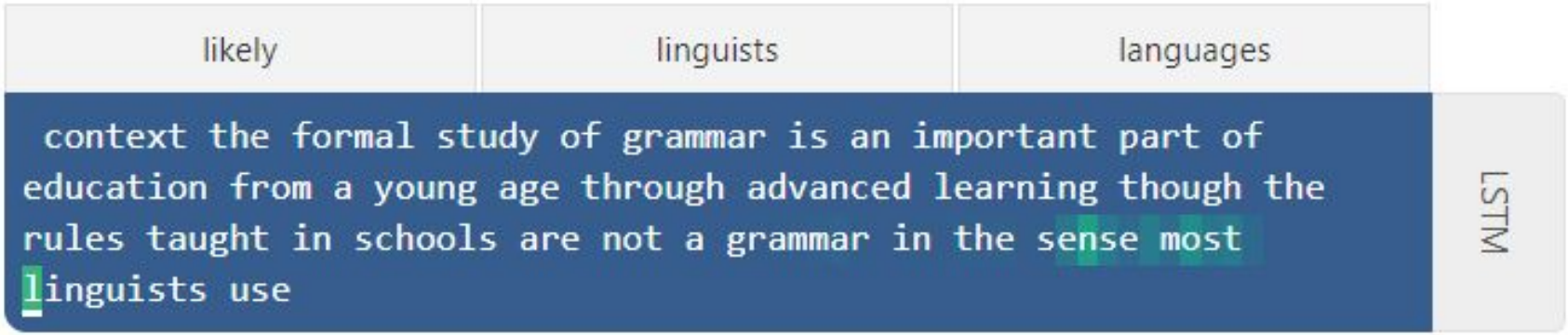
POSITIVE
i want to know
i know i need you to stay in shape check the vibe is right
just give me just for today
i'll be right
so i don't you give it up
and we'd be nowhere
and i'm sorry
so much more that he'll find a way of what i have a thing
that my love to you
i wanna stay with you
i was your age
in the sky
i'm gonna be a friend who's so much love when we'll see me with love
no matter what they say it's what i know that i want to go
it's what's got to be
and you can't want you to love me
and you were here
you don't get enough
i'm in the night away
when the going gets rough ;
the one girl
all that i'll be with you
i'd like to love you baby

Word-based LSTM model

- Text generation needs context
- Using previous states
- Vanishing Gradient Problem
- Forget, input, and output gates
- Top-k sampling

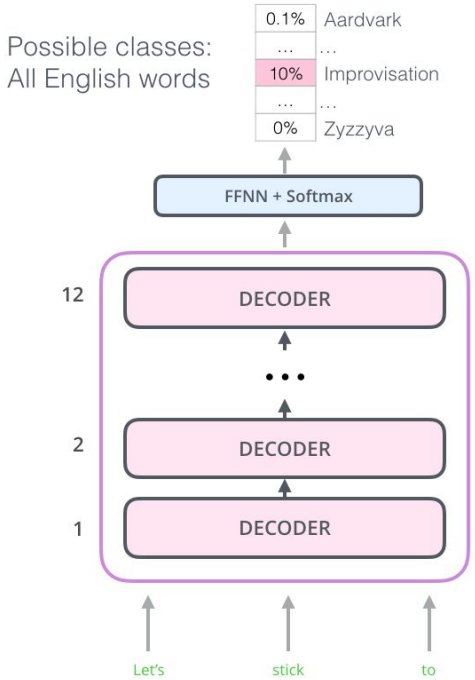


Character-based LSTM model



GPT-2 model

- Small model, 124M
- GPT2[2] (-simple library)
- 1000 steps

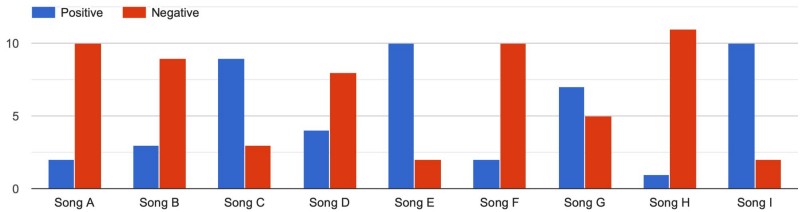


https://blog.floydhub.com/gpt2/

2) Radford, A., Wu, J., Child, R., Luan, D., Amodei, D., & Sutskever, I. (2019). Language Models are Unsupervised Multitask Learners.

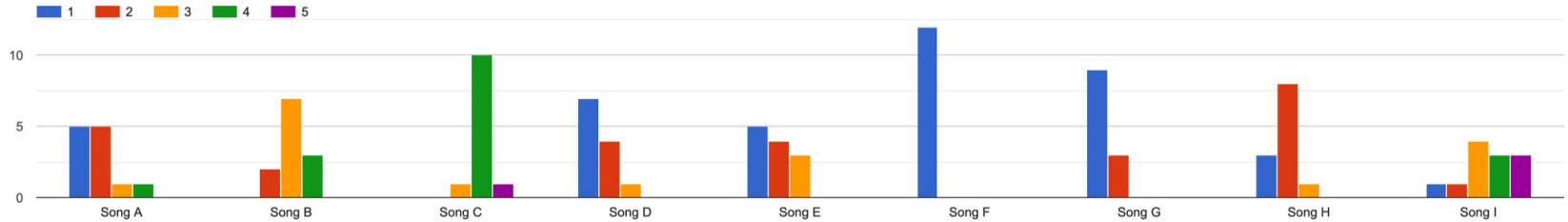
Evaluation of the songs

All songs have been generated to be pop songs and are either 'positive' or 'negative'. How would you classify each song?



Model	Average points	P/N guessed	P/N true
N-gram (E)	1.83	10/2	P
N-gram (A)	1.83	2/10	N
LSTM words(D)	1.5	4/8	P
LSTM words (G)	1.25	7/5	N
LSTM char (F)	1	2/10	P
LSTM char (H)	1.83	1/11	N
GPT2 (I)	3.5	10/2	P
GPT2 (B)	3.08	3/9	N
REAL (C)	4	9/3	X

To what extent does each song sound as a song written by a person? (1 being definitely not written by a person and 5 being definitely written by a person)



Discussion

- “Very difficult, as I didn’t ‘understand’ one of them. Those that sounded/felt most like a pop song appealed most to me. Those with weird words or weird metaphors appealed the least.” → creating a grammatically correct text is not the same as a song that makes you feel something!
- Text generation models do not use the music/rhythm of a song
- Average rating of the real song was 4