🎶 A BALLAD OF NLP 🎶

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Motivation and About the Project

This project was a cumulation of curiosity and hard work. The thought of us creating a model that is trained on lyrics of artists and then being able to create our lyrics from it was a great motivation for us as it was interesting as well as fascinating.

The project has been divided into two parts:

Part A: **Finding a dataset**.

We decided to make our own instead of a predefined one. The lyrics or dataset which has been collected was done through web scraping.

Part B: Creating our own model and fine-tuning a SOTA Model

We created a custom LSTM model using the dataset made in part A.

Part C: Create a dataset for 2 specific artists and train our model on them separately. The 2 artists chosen were: Panic! At The Disco and Bruno Mars.

Data and Labels

1. The dataset created in part A has the following columns: rank, song, artist_base, artist_all, year, song_clean, artist_clean, lyrics and source. The dataset has **5401 rows.**

2. The 2 datasets created in part C had only a single column with the lyrics of the artists. The **Bruno Mars** dataset had **33 rows** and the **Panic at the disco** dataset had **67 rows**.

Models

Custom Model
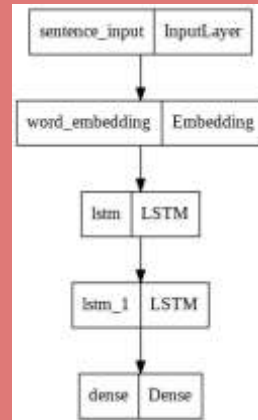
GPT-2
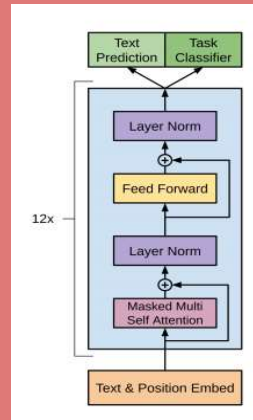
Results

- **Part A**

  o Accuracy was only 49%. and the generated lyrics are lacking context and is void of any artistic brilliance. This was majorly due to the poor embedding that the model learnt while training and also shows the inefficiency of simple LSTM model for higher order Language tasks.
  o The lyrics generated by the fine-tuned GPT-2 model was coherent and context relevant.

- **Part B**

  o We can see that the lyrics generated of by the two models were unique and coherent . The models also took into context the difference in style of the two artists.

Conclusion and Future Work

- We can improve on our own baseline model by using models which take into consideration Context in a much better manner such as BERT, ELMO, etc
- We can also train our model on a much larger dataset i.e not only billboard songs
- We'd also like to make use of both audio and lyrics to generate a model that can create its own song.
- The lyrics generated from our SOTA are great and the thing we set out to do was accomplished
- There are still improvements that can be done to increase the Accuracy and creation of Context-Dependent Lyrics

References

1. Scraping song lyrics blog post
2. lyric- generator blog post
3. Music-lyric analysis
4. https://aclanthology.org/D15-1221.pdf
5. Fine tuning GPT2
6. Transformers documentation