Generating Rap Using Neural Networks

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***Abstract*— Music is loved by almost all humans. With the progress in area of artificial intelligence, there is a lot of scope for music to take new turns. We take a small step with this project by making a rap generator using neural networks.**

I. PROBLEM STATEMENT

Music, unlike many other problems, is an artistic pursuit and thus it is considered something that only humans can create. This and the lyrical and musical components required make creating music an interesting problem to solve using AI. In this project we aim to do exactly that by creating rap music- a genre which has grown greatly in popularity in the recent years- and doing it in a manner which generates lyrically and musically pleasing rap on a beat of our choice using machine learning techniques.

II. LITERATURE REVIEW

We read some papers to prepare for our project which included studies in both music and poetry generation using machine learning and artificial intelligence. We came across a project using LSTM to generate new drum patterns using textified drum patterns from Metallica. There was also a study which trained a model on Shakespeare's works and generated poetry.

III. DATABASE DETAILS

The database used was generated using the python libraries PyLyrics. This library helps us to get the albums of various artists and further these can extract the lyrics of the songs in the album. The data was stored in the file named lyrics.txt. Here for the sake of testing we have used the lyrics of kayne west but can be obtained for any using the python script.

IV. METHODOLOGY

We used LSTM models to train the given dataset over 4 units of the neural networks. Once the model has been made, Markov model is runned on it to create a probability distribution model of the words so that the one with more probability is choosen more.

The Lyrics are generated in the making things in mind such as no common words are taken and repeating of words is discouraged. To do so, inbuit method of makesentence is used.

Finally the lyrics generated are studied and a reward is given for sentences that are similar in pronunciation. A negative reward is given if same word is repeated.

This gave us a file with lyrics of our rap. Now to make sure that the program sings the rap, we use text to speech python library called as pyttsx. This helps to convert the text into a speech. A thread in parallel is runned along side it to get a rap with the beats. For the testing purpose we use the rythmic beats of song -"Young, Dumb and Broke".

V. RESULTS

The results from the algorithm gave us the file with the lyrics and a computer program which raps for us based on lyrics of ones favorite artist.The Rap lyrics were making somewhat sense and pronunciation of the song was quite well. The lyrics seems to be quite new and were not same as those of original ones.

Though the lyrics generated were fresh, the rap did'nt came out to be pleasing since the voice module sung the rap in a same pitch and hence the rap seems boring.The rap generated was not going with the rythms at most of the time and hence the rap seems too plain to listen.

VI. TAKE-AWAYS FROM RESULTS

- Computation power should always be kept in mind while working with Neural Networks- this was a major constraint on working on more human inflection in our generated tracks.
- Preventing overfitting is important. Thus an element of randomisation should be included. Rap should be creative after all.

VII. CONCLUSION

We made a model which can create a rap from the given set of songs running along your favourite tune. We used Long Short Term Memory networks to generate the lyrics and try to make them lines of rap rythm. The rap was not so pleasing to human due to constant pitch and no feelings from the program side.

REFERENCES

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