Deep Learning: Case Study

Title : Lyrics Generator: RNN

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Introduction

In this project, I will be building a model to generate text. My goal is to build a song lyrics generator to explore the "creative" side of the Recurrent Neural Networks(RNN). RNN Text generator is one of my most desired to-do projects. I am finally checking this one off my to-do list.

Tools and Technology

Tools and Libraries	Usage
KERAS	Keras is an open-source software library that provides a Python interface for artificial neural networks. Keras acts as an interface for the TensorFlow library.
NumPy	This interface can be utilized for expressing images, sound waves, and other binary raw streams as an array of real numbers in N-dimensional.

Seaborn	Seaborn is a library in Python predominantly used for making statistical graphics. Seaborn is a data visualization library built on top of matplotlib and closely integrated with pandas data structures in Python.
Pandas	Pandas is a Python library. Pandas is used to analyze data. Learning by Reading. We have created 14 tutorial pages for you to learn more about Pandas.

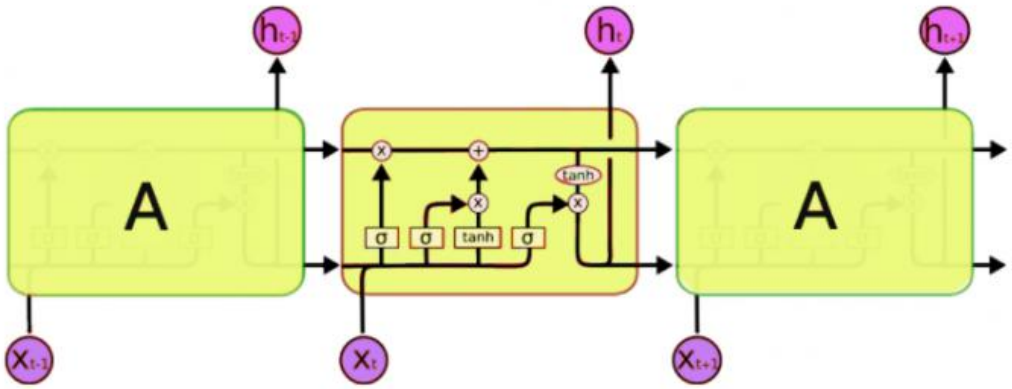
Model Explanation and Architecture

The functioning of LSTM can be visualized by understanding the functioning of a news channel's team covering a murder story. Now, a news story is built around facts, evidence and statements of many people. Whenever a new event occurs you take either of the three steps.

1. Forget Gate
2. Input Gate
3. Output Gate

Now, this is nowhere close to the simplified version which we saw before, but let me walk you through it. A typical LSTM network is comprised of different memory blocks called cells
(the rectangles that we see in the image). There are two states that are being transferred to the next cell; the cell state and the hidden state. The memory blocks are responsible for remembering things and

manipulations to this memory is done through three major mechanisms, called gates.



WorkFlow

1. IMPORTING LIBRARIES
2. LOADING DATA
3. DATA EXPLORATION
4. DATA PREPREPROCESSING
5. MODEL BUILDING
6. EVALUATING MODELS

Conclusion:

On observing the output of the Lyrics Generator, it is clear that while some of the sentences might be correct, but most of the lyrics do not make sense. It does look like a song tho. The model didn't learn the meaning of the songs. However, the character-based approach is producing some legitimate words. To get to a song that makes better sense I may consider a transformer-based text generator, but that's for some other time.

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Output:

Dataset:

https://www.kaggle.com/karnikakapoor/lyrics-generator-rnn/data

Project Link:

https://github.com/bhoomisojitra/DL_Project/blob/main/Lyrics_Generator_RNN.ipynb