Business Requirements Document

AI Music Lyrics Composition Assistant

Author: Uche Othniel Osakwe

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1 Executive Summary

This Business Requirements Document (BRD) outlines the requirements for the AI Music Lyrics composition assistant. It contains both functional and non-functional requirements, an overview of the current status, as well as the proposed process once the solution is implemented. It is used to determine what needs to be done, and as a starting point for solution design.

2 Project Description

“Writer’s Block” as the name implies, is one major pitfall that most creative today face while creating literature, poems, movie scripts, and song lyrics. It takes a lot of time, effort and motivation to get all the ideas from the mind, to pen and paper before any production can be done.

Previously creatives have been known to hide the fact that they hire ghost writers in order to help create lyrics and writeups so as to stay consistent in the industry, and sometimes if there is no synergy the creatives tend to drift off their original styles and brand due to external influences in the creative process.

After these two facts have been established, I decided to carry out this project in order to build a user interface in which creatives can feed their previous compositions and write ups of whatever kind or media into an AI text generator model, and the machine will be able to predict and generate ideas in form of texts and sentences in order to assist the creatives in reproducing those billboard topping music composition, consistently. Consistency is the key to success in the entertainment industry!

3 Project Scope

3.1 In Scope

The following areas are in scope for this project:

- NLP text generation model
- GUI creation
- Text Processing

3.2 Out of Scope

The following areas are out of scope for this project:

- Audio generation
- Musical generation
- Audio engineering

4 Business Drivers

- *Improve efficiency in the music production process*
- *Reduce time or costs of song writing process*
- *Avoid legal and copyright issues*

4.1 Business Driver 1

Improve efficiency in the music production process

- This new innovation is going to be a breakthrough not just for experienced music lyrics composers but will be a very great advantage to new comer musicians trying to find a grip around lyrics composition.

4.2 Business Driver 2

Reduce time and cost of song writing

- It cost a lot to get ghost writers to project an artiste's creativity in form or words. This AI solution which can be retrained over and over again with more original lyrics of a certain composer can help create ideas which will be in line with a composer's style, and this will reduce the time it takes to create a song and also the cost of hiring another individual to do that for the composer.

4.3 Business Driver 3

Avoid Legal and copyright issues.

- A lot of copyright issues are involved in hiring individuals to assist in the creative process of music production. This AI solution will definitely cut down legal issues in the aspect of song writers copyright when applied appropriately.

5 Proposed Process

This project will entail 5 major processes

- Initiation and approval
- Data set availability search
- Training an NLP model
- Testing the Model
- Creating the GUI
- Integration into a music production workflow

6 Functional Requirements

6.1 Priority

The requirements in this document are divided into the following categories:

Value	Rating	Description
1	Critical	This requirement is critical to the success of the project. The project will not be possible without this requirement.
2	High	This requirement is high priority, but the project can be implemented at a bare minimum without this requirement.
3	Medium	This requirement is somewhat important, as it provides some value but the project can proceed without it.
4	Low	This is a low priority requirement, or a “nice to have” feature, if time and cost allow it.
5	Future	This requirement is out of scope for this project, and has been included here for a possible future release.

6.2 Requirements Category 1 (RQC)

ID	Requirement	Priority	Raised By
RQC 1	Data	Critical	
RQC 2	RNN algorithm	Critical	
RQC 3	Error free Text generation Model	Critical	
RQC 4	Fast processing computer system	Critical	
RQC 5	GUI creation and deployment tool	Critical	

7 Non-Functional Requirements

ID	Requirement
NFR 1	Human music Lyrics composer
NFR 2	Music Instrumentals
NFR 3	

8 References

Name	Link
Roger B. Dannenberg	http://www.cs.cmu.edu/~rbd
Dan Nelson	https://stackabuse.com/text-generation-with-python-and-tensorflow-keras/

9 Document History

Version	Date	Changes	Author
0.1	24/01/2020	First document	Uche Osakwe
0.2	7/02/2020	Data Acquisition and understanding	Uche Osakwe
0.3			
0.4			
0.5			

10 Data Acquisition and Understanding

For this project I have decided to make use of a dataset which contains a large amount of texts written by William Shakespeare. This data set is a very valid one to train our model with because it contains a large amount of words and characters which have already be decoded and cleaned up for immediate use. The source of this dataset is also a reliable one. Python download the dataset directly from a goggle api storage link, so its very secure and loads completely without errors. Subsequently as the project is being executed, we will attempt to feed in just any set of conversations or texts from sources like WhatsApp, preprocess and utilize on our model. The idea is that when the model is fully created, any artiste can feed in their original composition and the machine would learn to compose lyrics very similar to what they would originally compose.

The link is provided here:
https://storage.googleapis.com/download.tensorflow.org/data/shakespeare.txt

In the next phase I will be talking about the Data Assumptions, Limitations and Constraints

10.1 Data Assumptions:

- This dataset will be elaborate enough to help us train our model properly
- The dataset has already been cleaned up and can be used without issues or errors
- The dataset will be successfully tokenized to keywords based on different genre's of music

10.2 Limitations

- Although the dataset consists of numerous texts which helps us train a good model with a real life scenario of text input, not much exploratory data analysis can be performed because its not a tabularly defined dataset with distinct feature columns and axis.
- Considering the kind of vocabulary built in to the dataset texts, which is an ancient form of writing and vocabulary. A model created wont be able to generate words and lyrics outside this vocabulary, therefore it wont be able to be in-sync with just any type of music artiste.

10.3 Constraints

- The major constraint so far is being able to embed or tokenize our working dataset according to genre or mood of the music, as our reference generator key words

- Inputting any desired text dataset especially encrypted WhatsApp chat conversation, requires a lot of preprocessing and additionally decoding in order to be read and explored by the python IDE.

In conclusion, with the available data set I have, I can move on to the next stage of building the model and validating it for text generation in this project.

10.4 Methodology

- The major AI methodology to be applied in this project is the NLP(Natural language processing)
- The concept behind this project is Text generation using RNN. This is going to be the backbone of our model.

10.5 Procedures

- The first stage of the project is to analyze and explore our dataset in order to understand all the necessary features and required pre-processing steps.
- Secondly preprocessing of the dataset in order to make it ready and fit to apply into a model
- Third phase will be to create the model with a well established amount of epochs in order to produce a very accurate model.
- Fourth phase would be to create an end point GUI in which users can interact with to generate lyrics per time. Depending on the number of characters we wish to set our model to generate per iteration.
- Final stage would be the testing stage.

Kindly find attached the link to my Exploratory Data Analysis Jupiter notebook.

https://github.com/ucheothniel/uche-osakwe-/blob/master/Exploratory%20Data%20Analysis.ipynb