

LYRICS GENERATOR

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AGENDA

Introduction

Related Work

Method

Result

Limitation / Future Work





INTRODUCTION

- More AI & Deep Learning
 - Power & Importance of "TEXT" data
 - Ex) Natural Language Processing (NLP)
- Generative Models
 - Text Generator
- Many fields using text data...
 - Music industry - "LYRICS"
- Generate lyrics based on different genres

RELATED WORK

- Ghostwriter: Using an LSTM for Automatic Rap Lyric Generation
 - Potash, Peter, et al (2015)
 - Ghostwriting issue
 - Generating rap lyrics & Rhyme component
- Larger training & testing data
- Expanded to more genres including rap

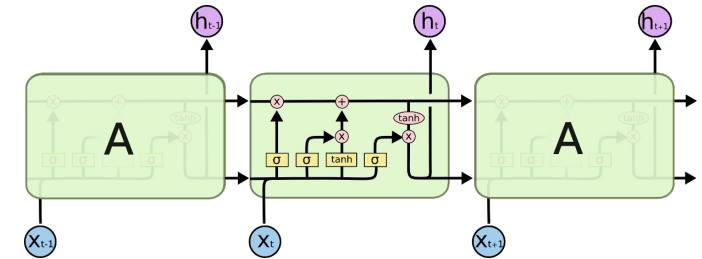
METHOD

Data Pre-processing

- 5.91 million songs from genius.com
- Country / Rap / R&B / Pop
- Data cleaning
 - Regular expression
 - [Verse 1] , [Chorus]...

Model

- Long Short-Term Memory (LSTM)
 - Type of Recurrent Neural Network (RNN)
 - Previous output as parameter
 - Sequential Data
 - 3 Layers
- Hyperparameter tuning
 - Sequence length (2 / 3)
 - Batch size (128 / 256)

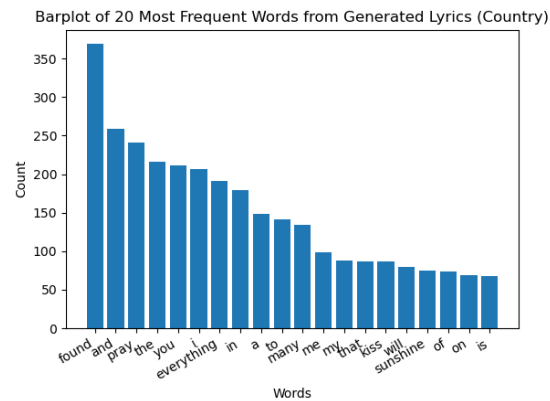
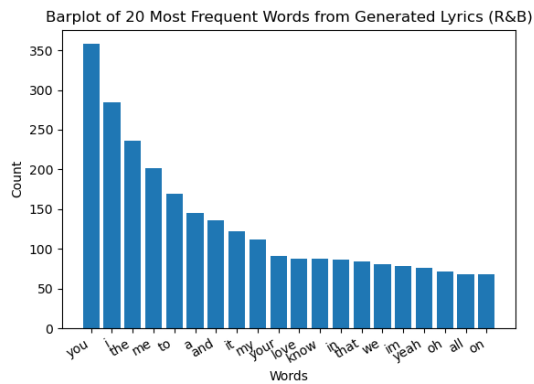
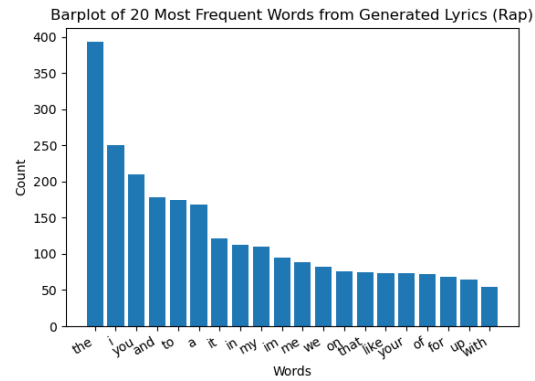
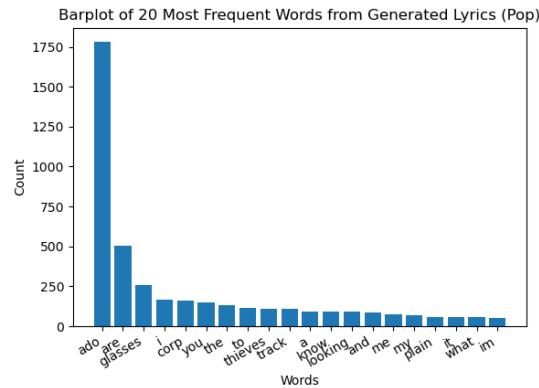


RESULT - MODEL ACCURACY

Country	Batch size = 128	Batch size = 256
Sequence length = 2	0.0055	0.0020
Sequence length = 3	0.0022	0.0656

R&B	Batch size = 128	Batch size = 256
Sequence length = 2	0.1030	0.1193
Sequence length = 3	0.0181	0.0596

RESULT - TOP 20 MOST FREQUENT WORDS



- Top 20 most frequent words from generated lyrics
- Rap
 - Stop / Short / Negative words
- Country / R&B
 - Long words
 - 'Love' - Positive
- Pop
 - Mixed

RESULT - GENERATED LYRICS

Genre (Sequence length=3 / Batch size = 256)	Generated Lyrics (Input = "I am")
Country	I am im one truck im wide any on still than...
Rap	I am scene cam / Gangsta river somewhere shoot...
R&B	I am is / Room would day me when / I put up...
Pop	I am wind / Thang change thriller ich tiene...

SUMMARY

- Limitations
 - Data cleaning
 - Model structure & training
 - Hyperparameter tuning
- Future Works
 - Music components
 - Linguistics-related studies
 - More diverse genres / artists





THANK YOU

- Code
<https://github.com/dylanbowman314/lstm-lyrics-generation>