



ToBig's

14th

Conference

Recommendation



# Music Recommendation by Image

김종우, 나다경, 엄제윤, 이지수



Recommendation





ToBig's



14th



Conference



Recommendation



01

Motivation



MRI

02

Data



Melon Playlist  
Image&Caption Data

03

Modeling



Music Recommendation  
Image Captioning

04

Result



Recommendation





Motivation

Data

Modeling

Result



## 이미지의 분위기와 유사한 노래 추천



부산 바캉스

레게 강 같은 평화



바다보러갈래 (SEE SEA)

호린



여름여름해 (Sunny Summer)

여자친구 (GFRIEND)



여름 안에서 by 싹쓰리 (Feat. 황광희)

싹쓰리 (유두래곤, 린다G, 비룡)



Motivation



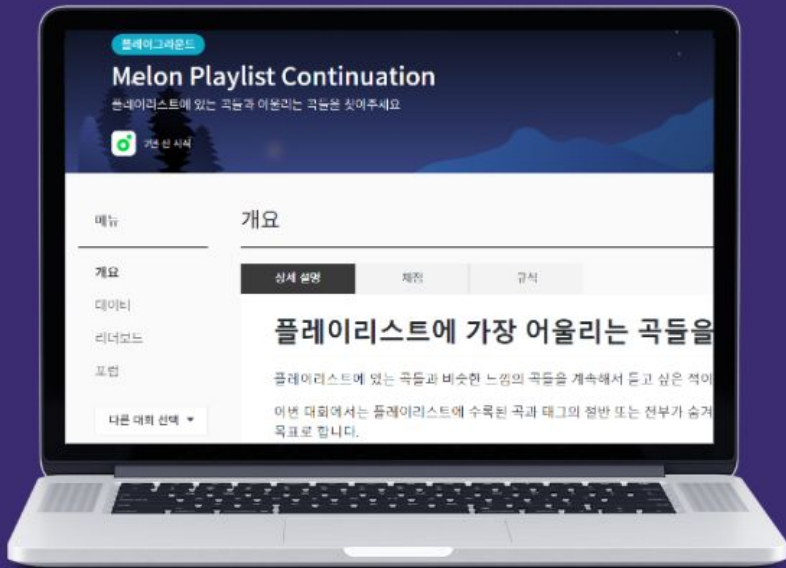


Motivation

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Result



Song\_meta

곡 제목, 곡 장르, 아티스트 등이 수록되어 있는 파일

Arena\_mel

곡에 대한 mel-spectrogram을 담고있는 파일

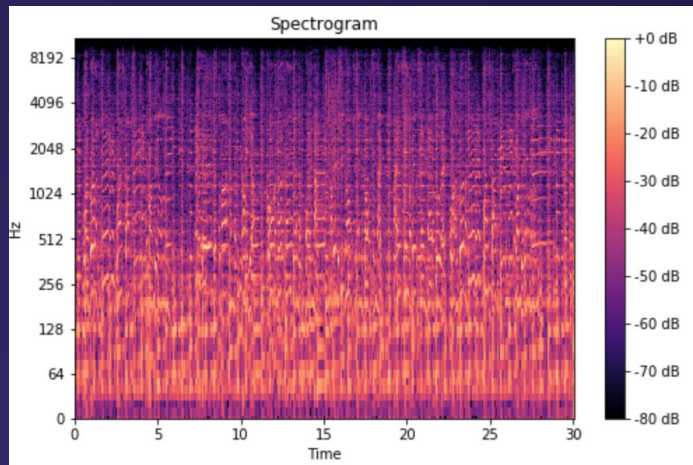
Flickr\_Data

한 사진에 대해 다섯개 이상의 caption을 가진 파일

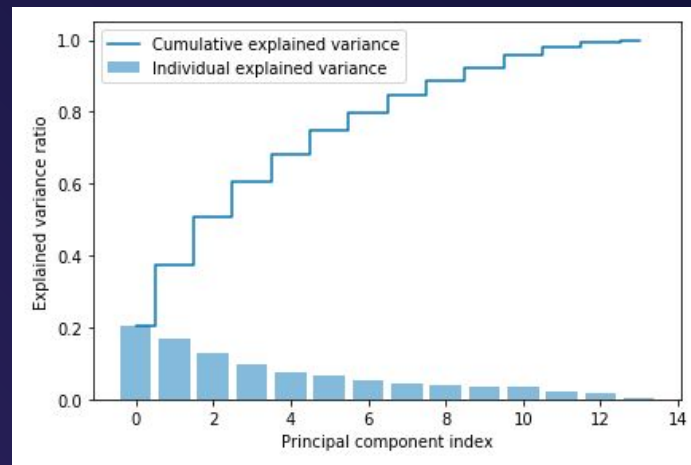
Used Data



## Mel-spectrogram Preprocessing



48x1892 → 48x20  
240GB 2GB



About 85%  
Explained Variance



Motivation

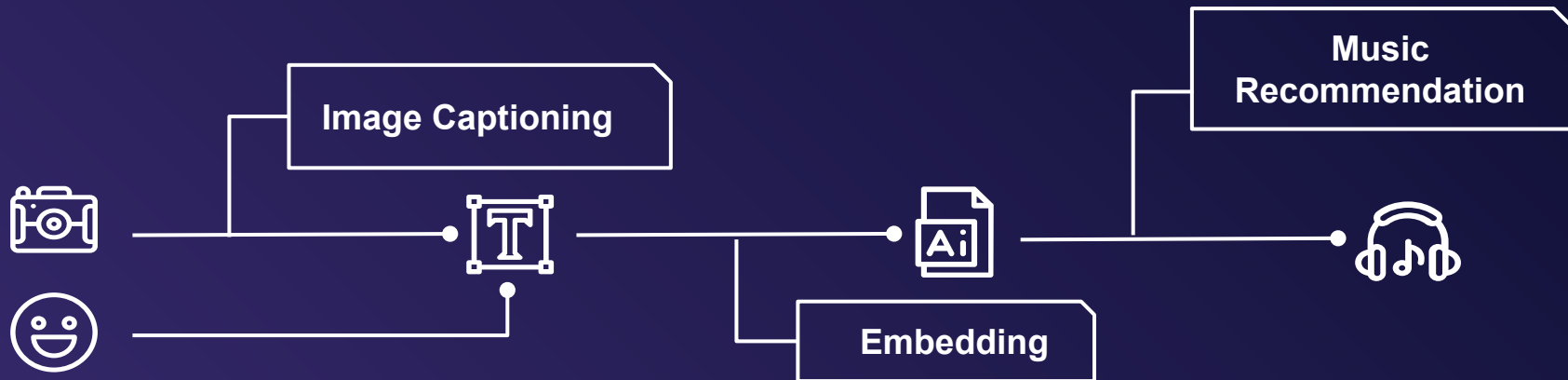
Data

Modeling

Result



## Service Flow



Service Flow





Motivation

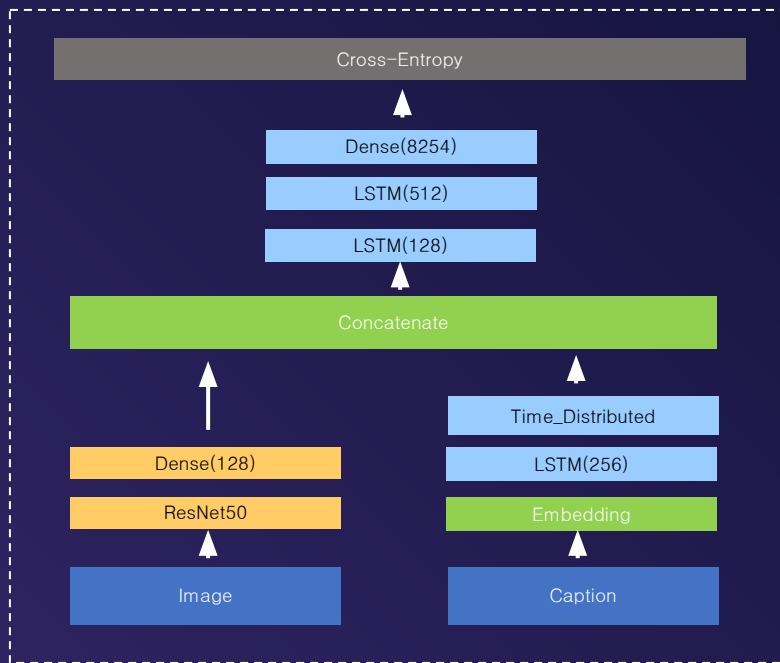
Data

Modeling

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## Image Captioning



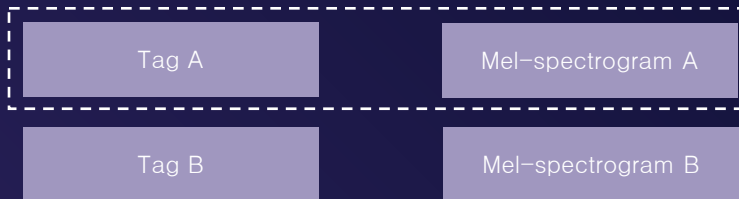
Modeling



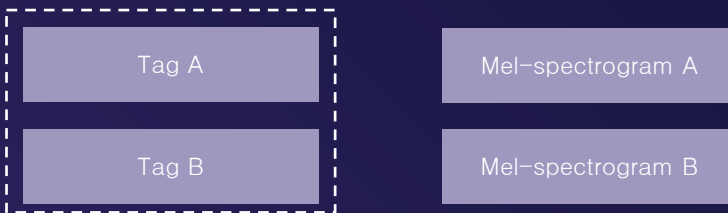


## Input Data

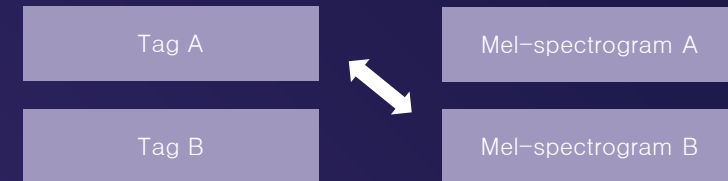
100%의 similarity를 가지는 것으로 가정



Tag A와 Tag B의 similarity를 계산



Tag A와 Mel-spectrogram B의 similarity로 가정







Motivation

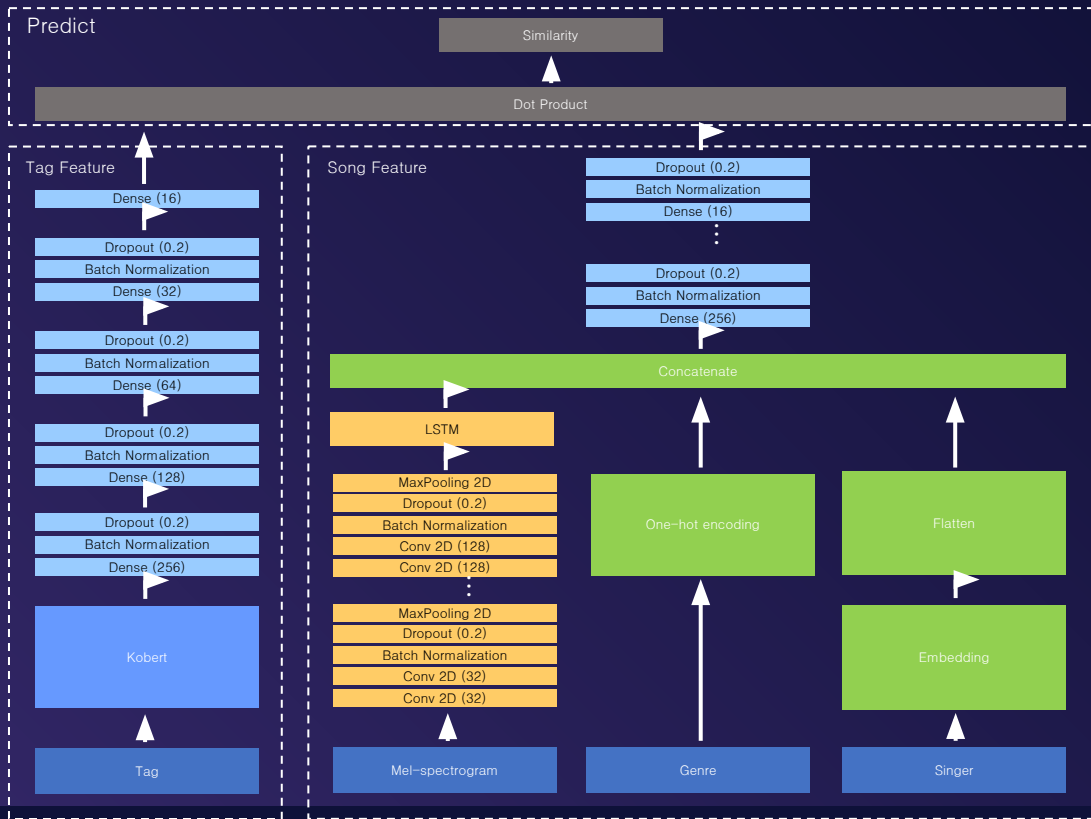
Data

Modeling

Result



# Song Recommendation Model



Modeling





Motivation

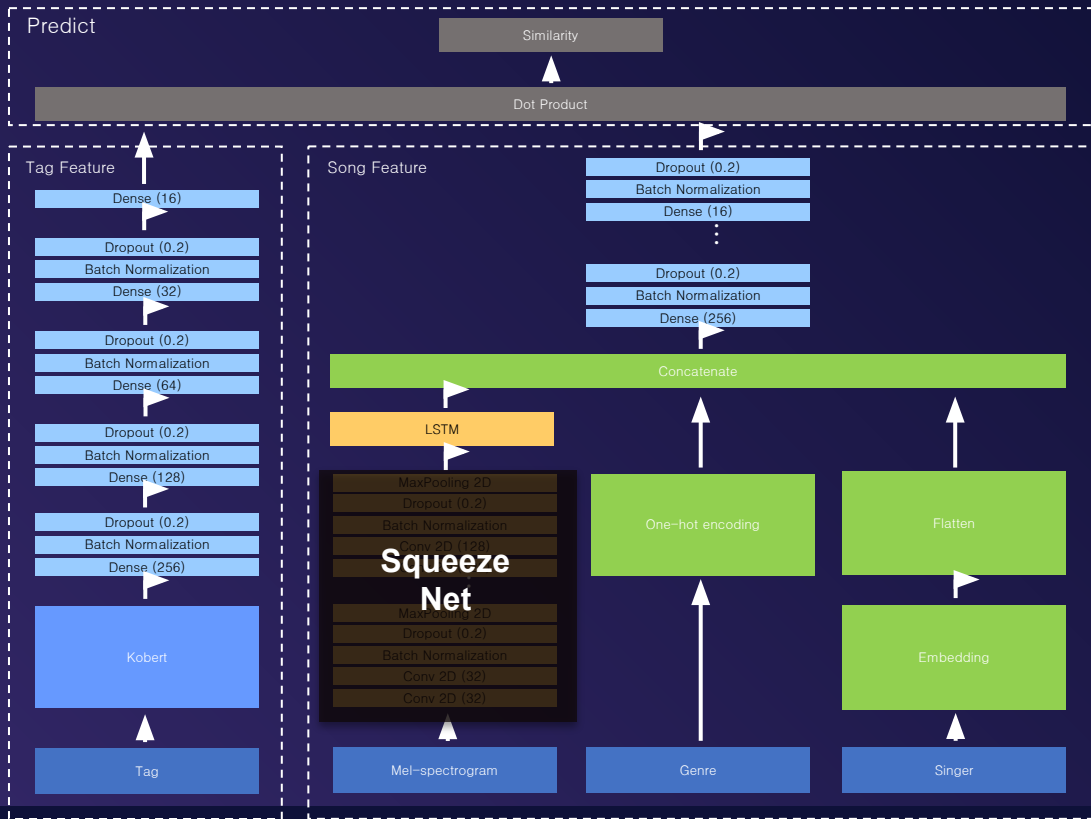
Data

Modeling

Result



# Song Recommendation Model



Modeling





Motivation

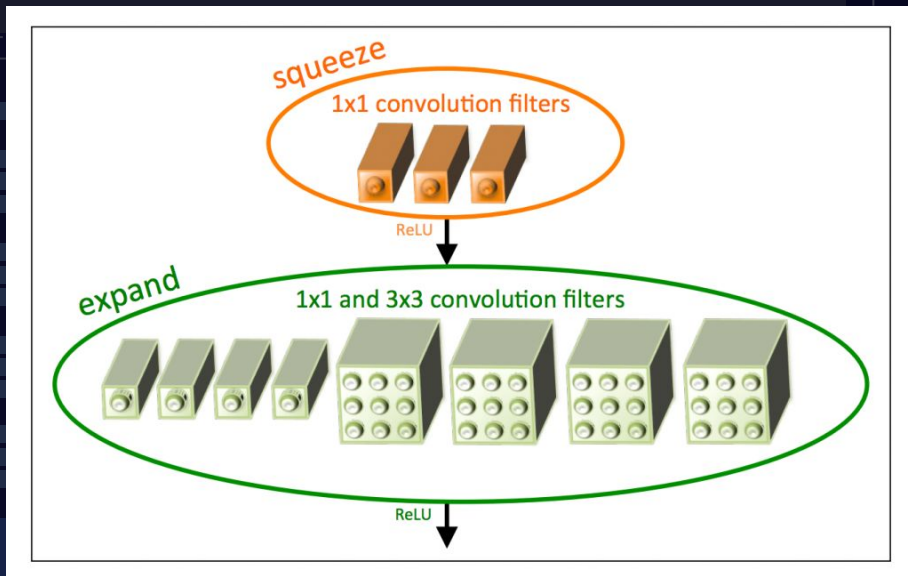
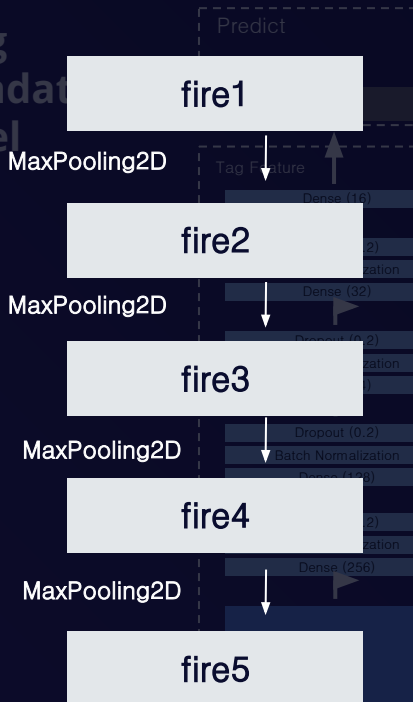
Data

Modeling

Result



# Song Recommendation Model



Modeling





Motivation

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# Song Recommendation Model



MSE

nDCG

Kendall's  $\tau$

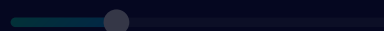
0.0083

0.99

0.4075

Squeeze  
Net

Modeling





Motivation

Data

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해변, 남자, 여자, ...



로맨틱, 밝음

Song_name	Artist_name
Lie About Us	Avant
Sanctify	Years & Years, Alma
Cups(Pitch Perfect's When I'm Gone)	Anna Kendrick
너야	Ashgray
어느 작곡가의 사랑	Le' Piano
Over The Rainbow	Karel Boehlee Trio
Luxury : Cococure	Maxwell
하나님의 반전	더콜링
다음에 또 봐	그냥노창
모차르트, 밤의 여왕 아리아	Various Artists

Result





Motivation

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## Restriction



### Incomplete Mel Data

Mel-spectrogram이 곡의  
일부만을 갖고 있음.



### Lack of Captioning Adjective

캡셔닝 결과 감정형용사의 부족



### Incomplete Metric

불완전한 성능지표



### Lack of Infra

전반적인 자원 부족



Restriction





Motivation



Data



Modeling



Result

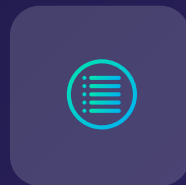


## Improvement



### Complete Mel-Data

전체 곡 데이터를 적용



### Adding More Data

곡 관련 데이터 추가



Improvement





## Reference

**Image Captioning DataSet : Flickr8ksau**

<https://www.kaggle.com/datasets/waelboussbat/flickr8ksau>

**Kakao Arena Melon-data**

<https://arena.kakao.com/c/7>

**Deep Convolutional and LSTM Neural Networks for Acoustic Modelling in Automatic Speech Recognition**

<http://cs231n.stanford.edu/reports/2017/pdfs/804.pdf>

***SqueezeNet: AlexNet-level accuracy with 50x fewer parameters and <0.5MB model size, Forreset N. Iandola et al, ICLR2017***

<https://arxiv.org/abs/1602.07360>







Motivation

Data

Modeling

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17기 염제윤

KINGKINGKINGKING  
KINGKINGKING  
KING



16기 김종우

내 mbti는 C.U.T.E



17기 나다경

최고의 엔딩 고양이  
집사



17기 이지수

음악이랑 거리두기  
3단계



Our Team





Motivation



Data



Modeling



Result



# THANK YOU



Thank U

