

# Animation Recommendation

By Team 6

# What we all about?



ソードアート・オンライン  
SWORD ART ONLINE

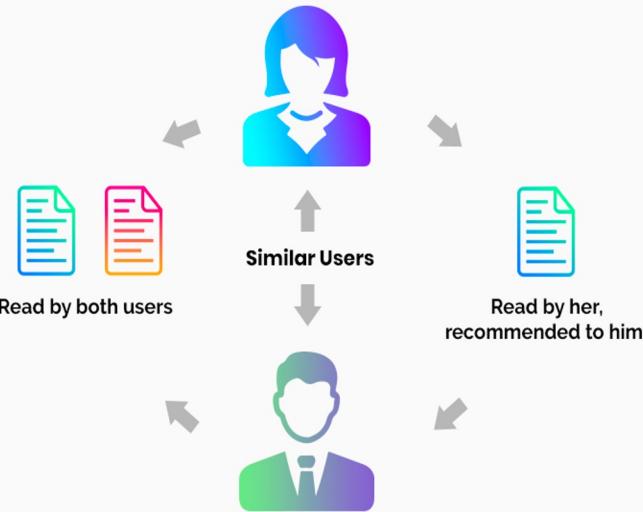
Animation Universe

Why this is important?

# Type of Recommendation System

- Collaborative Filtering
- Content-Based Filtering
- Hybrid Recommendation System

## Collaborative filtering



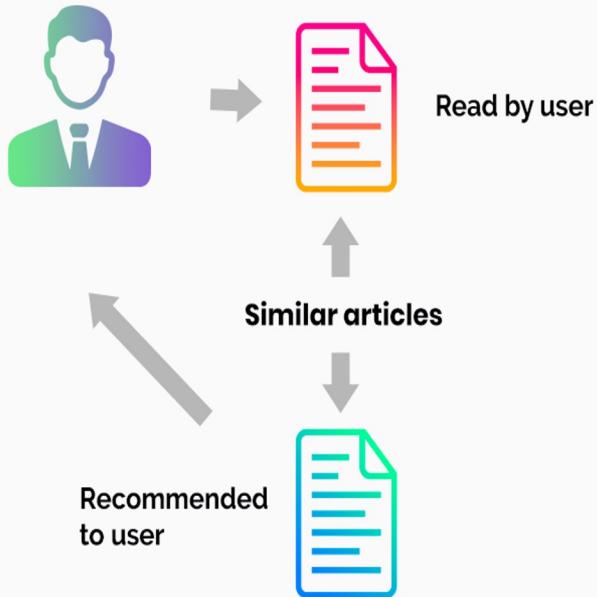
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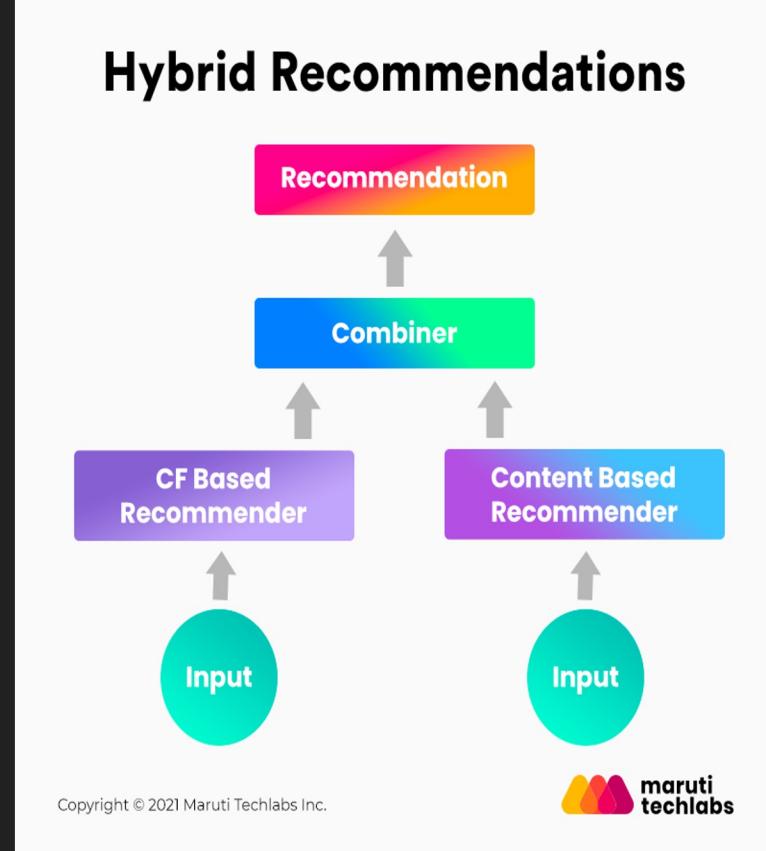
# Collaborative Filtering

# Content-Based Filtering

## Content-based filtering



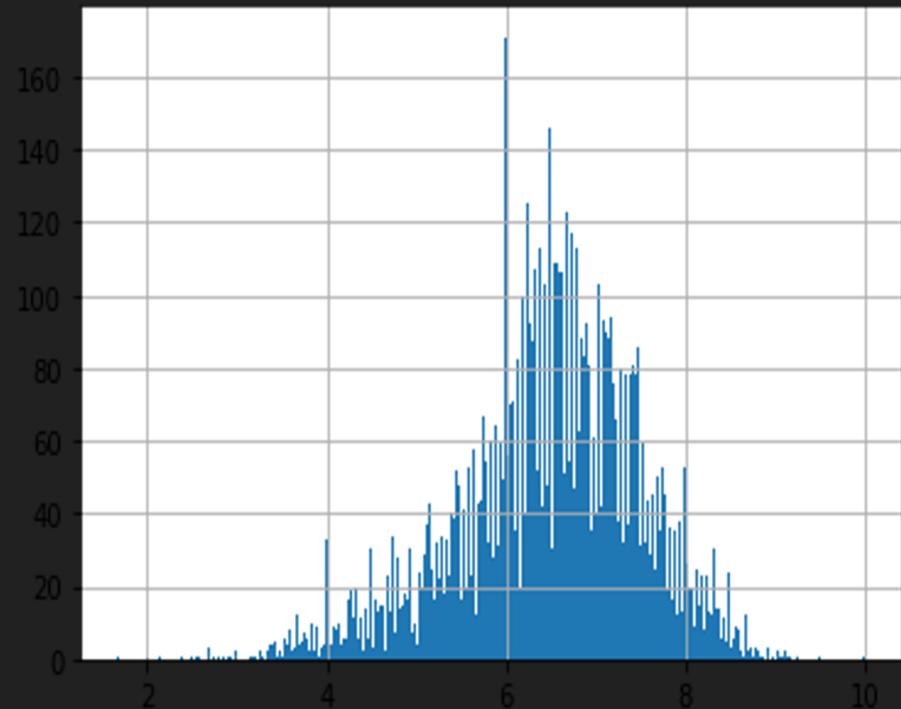
# Hybrid Recommendation System



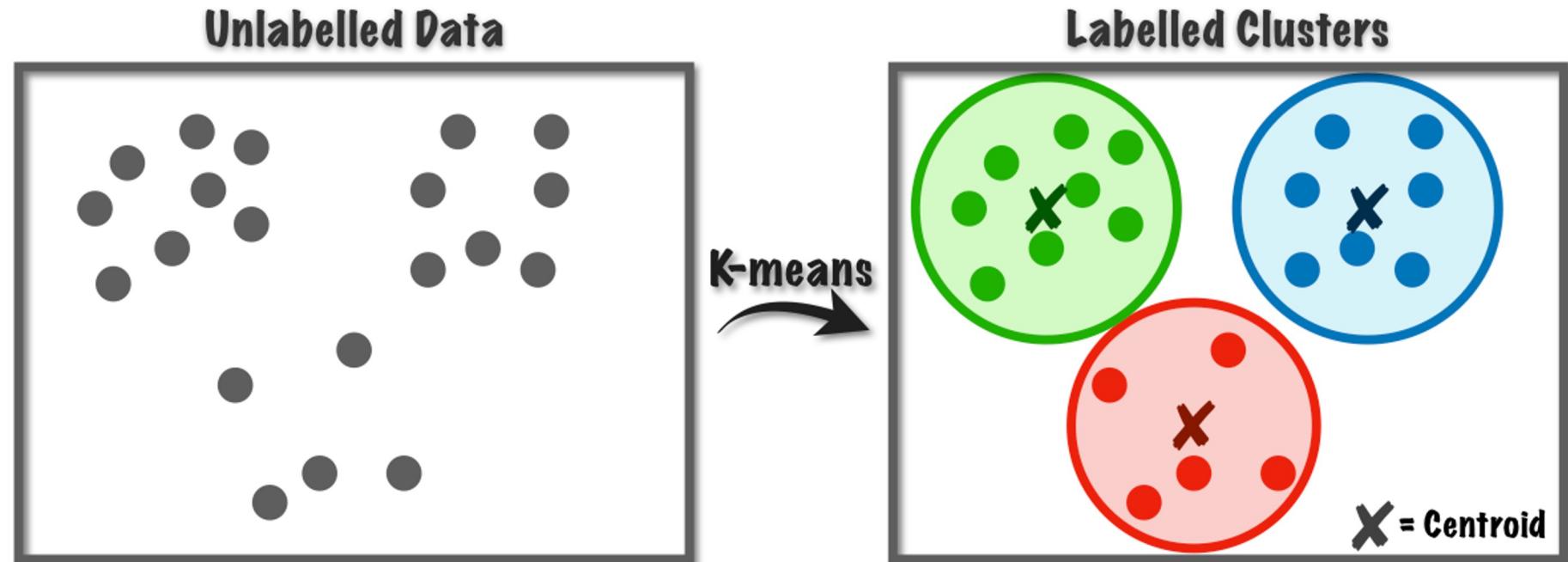
# Data

1. Handle the NaN Value
2. One Hot Encoding
3. Combine the tables

# Exploratory Data Analysis

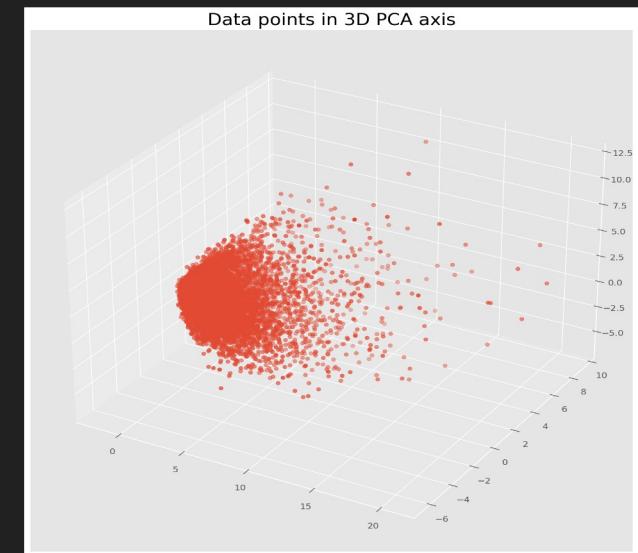
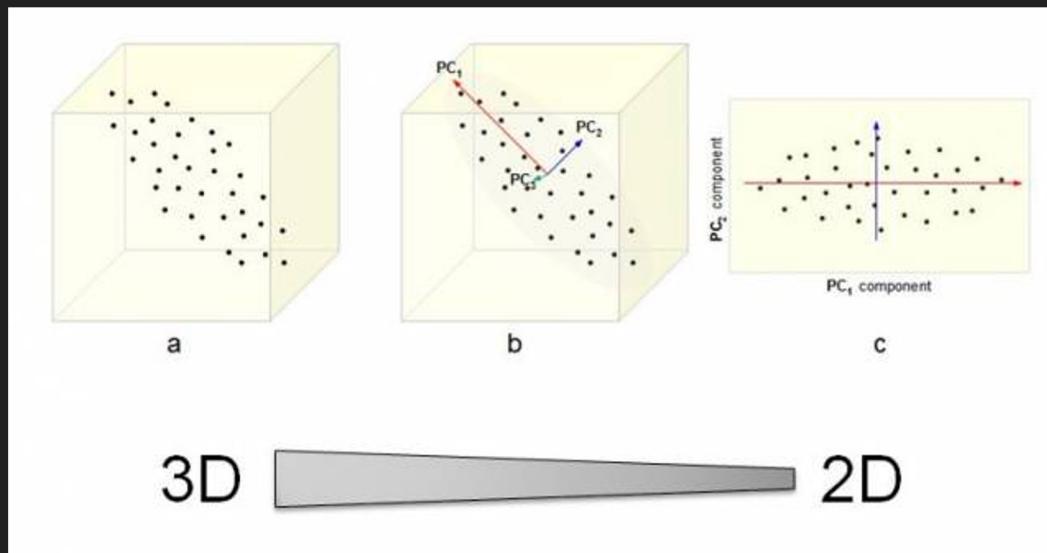


# Hypothesis and model



# Dimensionality reduction

## Principal component analysis (PCA)



# Parameters

- ***n\_clustersint***

We determine a hypothesis that will later be verified and corroborated. Such as the number of clusters to form

- ***algorithm{“lloyd”, “elkan””}, default=“lloyd”***

\*lloyd = EM-style algorithm(Expectation Maximization):

1)Maximization step: Assign points to those cluster centers

2)Expectation step: And then recompute the cluster centers based on those assignments

\*elkan =Accelerates k-means by avoiding redundant distance calculations.

- ***init{‘k-means++’, ‘random’}, callable or array-like of shape (n\_clusters, n\_features), default=’k-means++’***

Method for initialization:

‘k-means++’  
selects initial  
cluster centers for  
k-mean clustering

“random”  
choose n\_clusters  
observations (rows)  
at random from  
data for the initial  
centroids

an array is passed

it should be of shape (n\_clusters, n\_features) and gives the  
initial centers.

a callable is passed

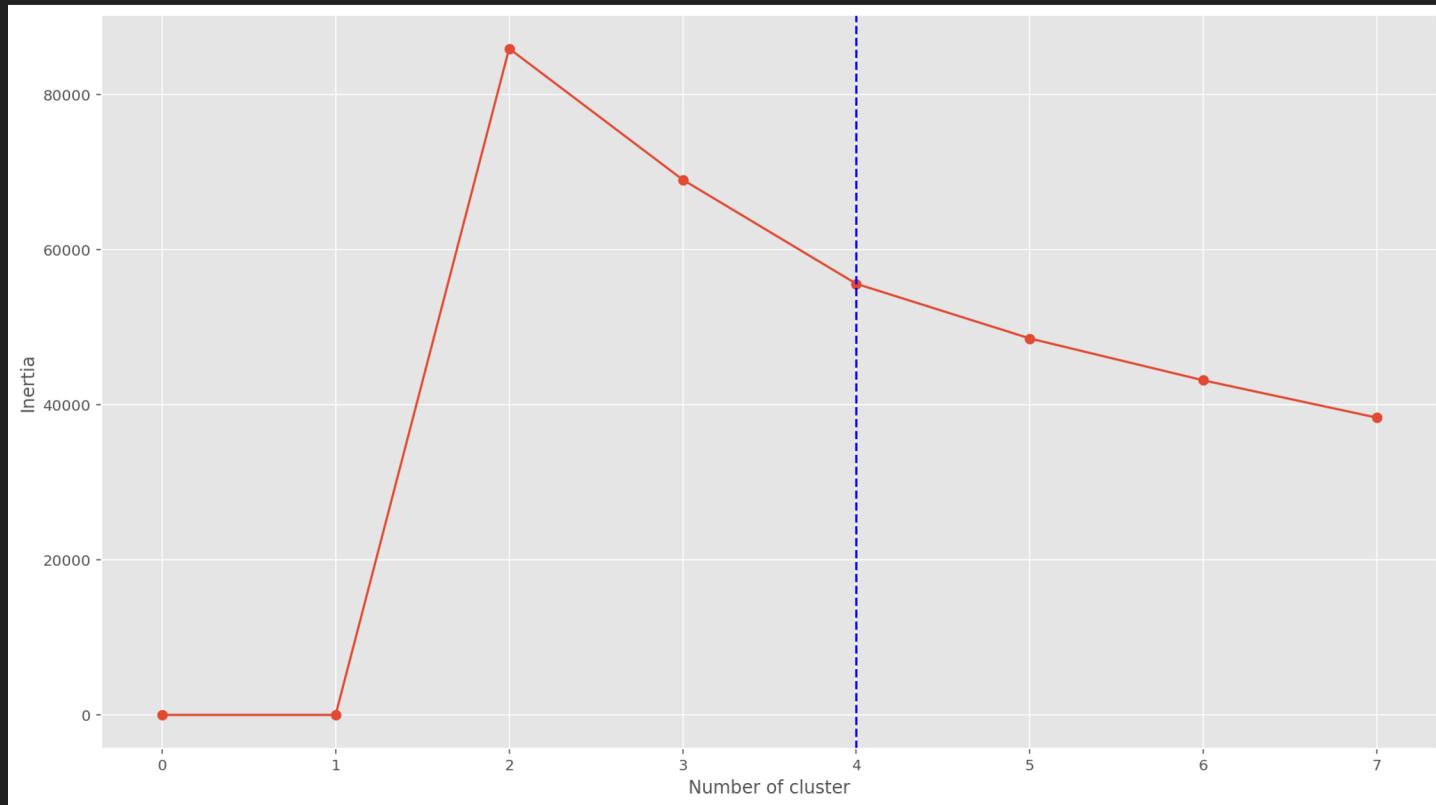
it should take arguments X, n\_clusters and a random state  
and return an initialization.

# The Elbow Method

for K-Means

Clustering

# Elbow Method

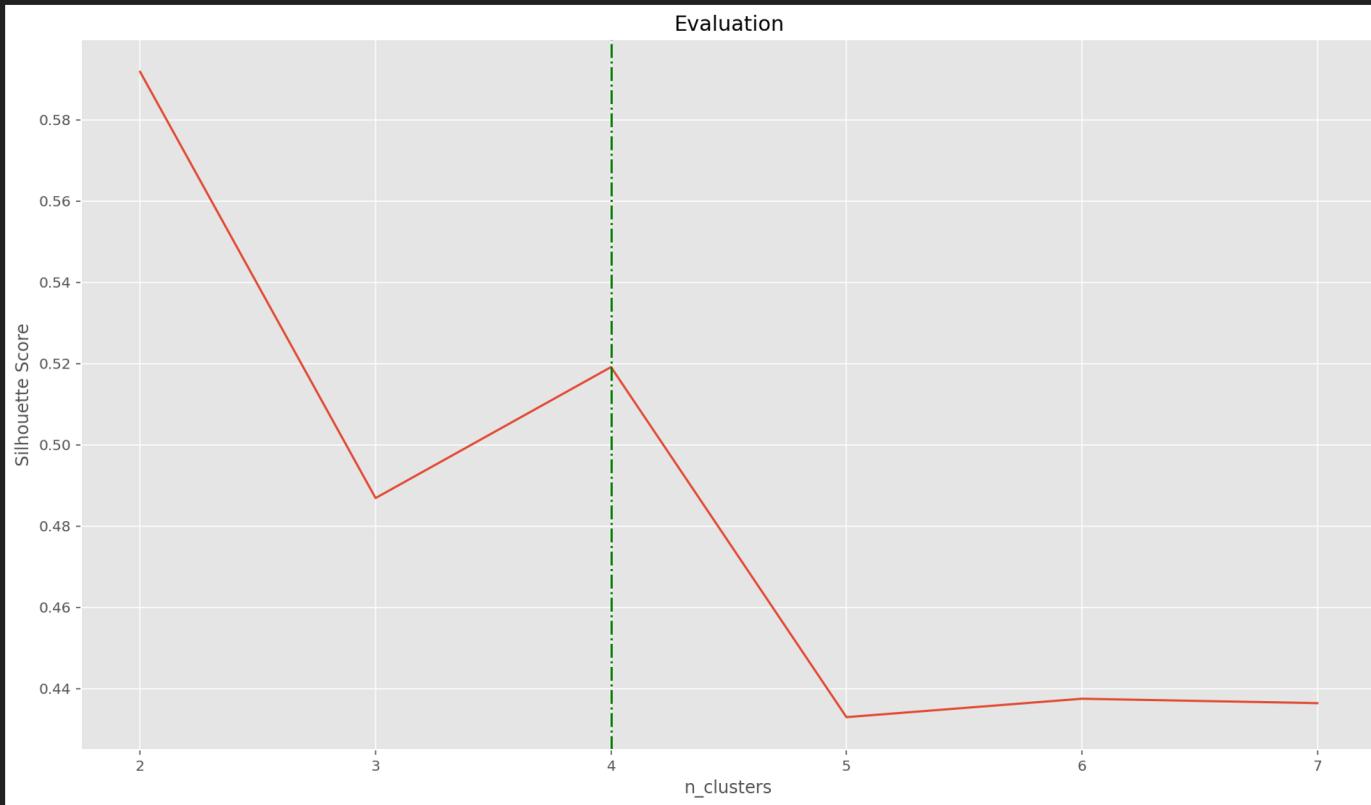


Evaluation Method

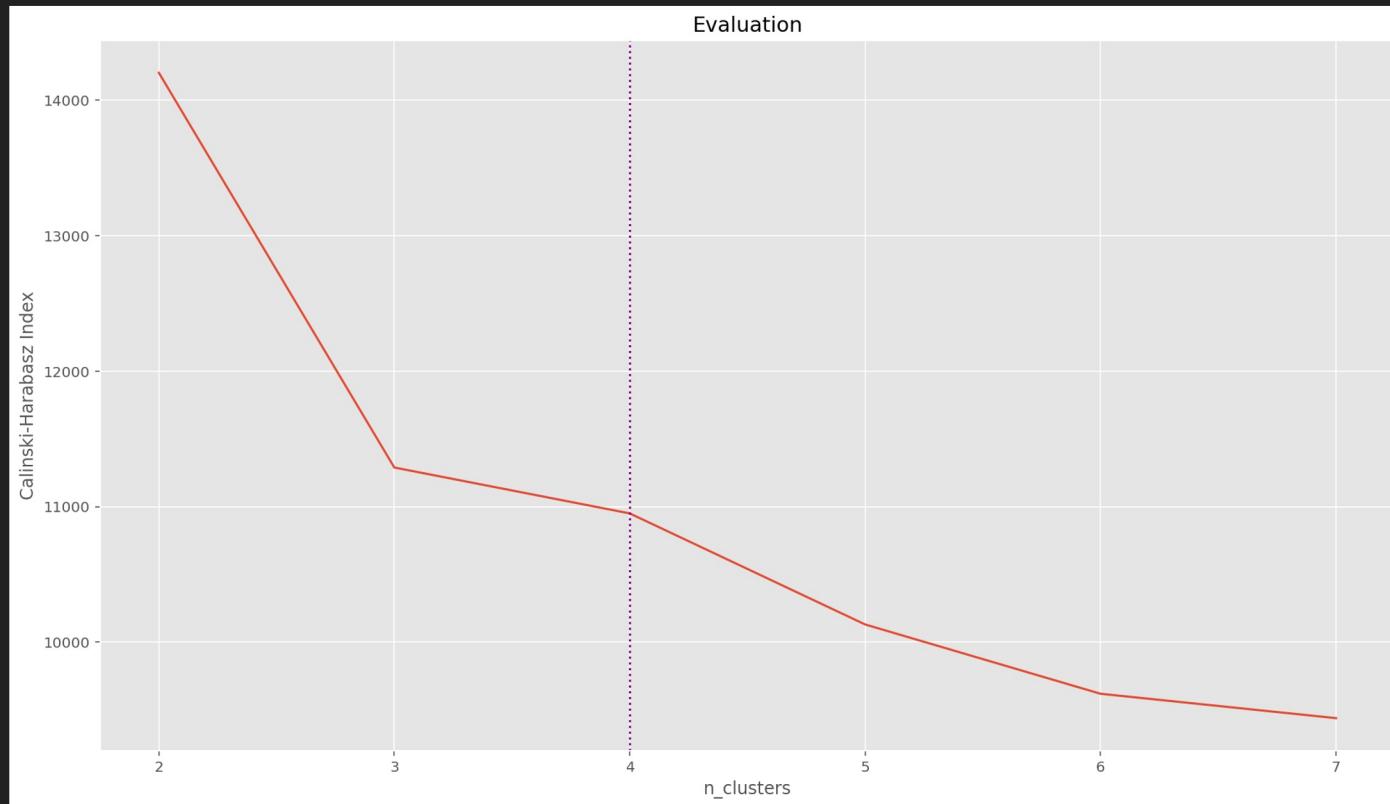
Silhouette Coefficient

Calinski Harabasz Index

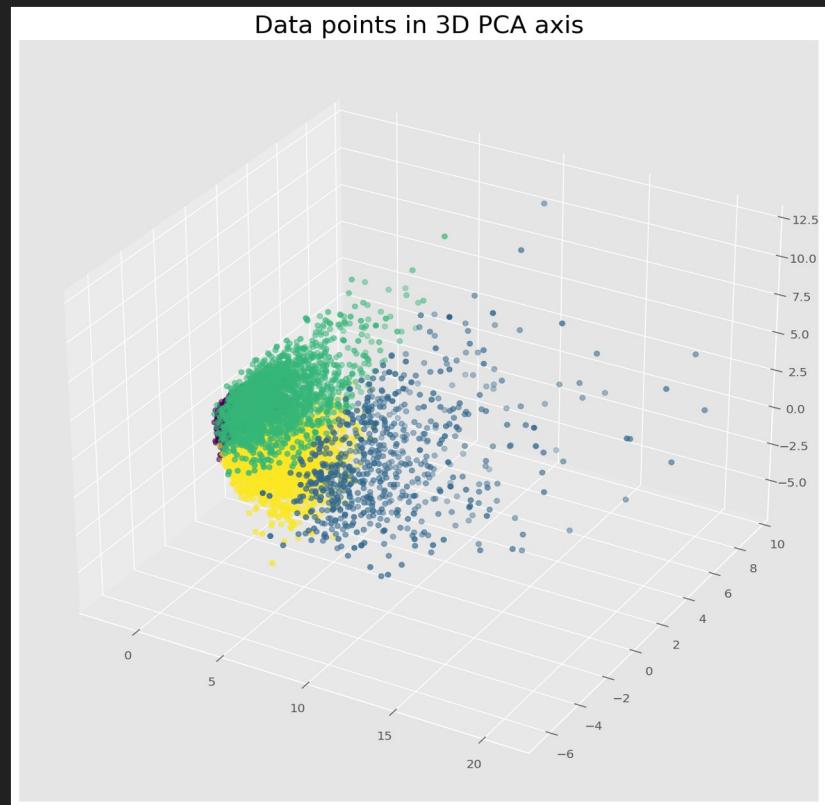
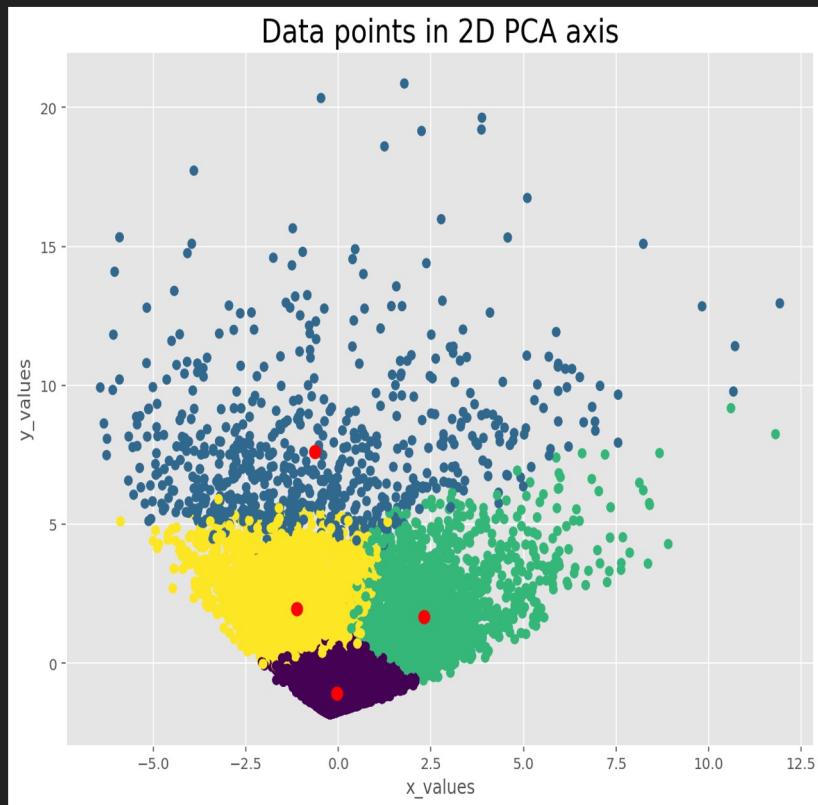
# Silhouette Coefficient



# Calinski Harabasz Index

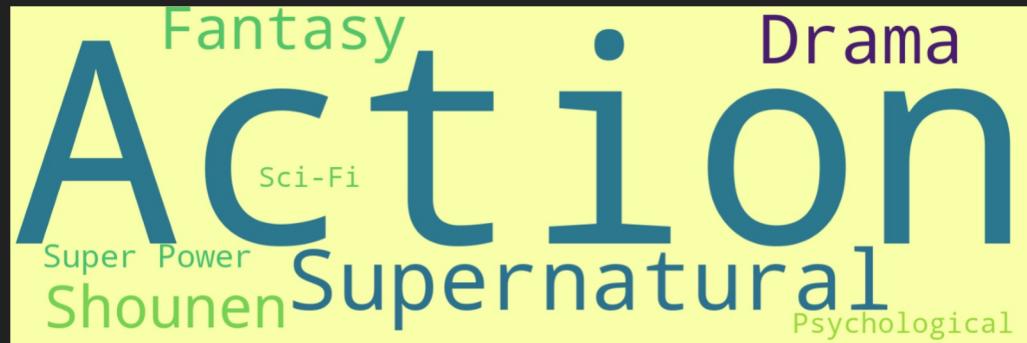


# Visualization



Supernatural School Fantasy  
Shounen Comedy Romance Drama Action

Super Power Fantasy Drama  
Shounen Action .  
School Romance Supernatural



# Future Plan

1. Using different clustering methods to find the most appropriate method
2. Implement the model into web app with user interface
3. Aggregate user feedback and merge into our dataset to create a more personalized experience

Thanks for Watching