



# **AI Wellbeing Advisor: a personalized recommender for wellness & relaxation**

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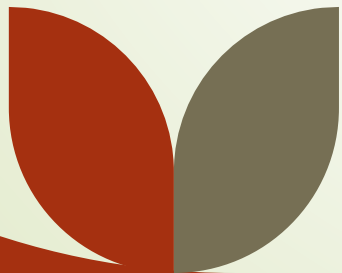
**Goal:** Build a GPT-based recommender system with YouTube API integration

- Is it good?
- How can I make it better?

# Project Overview

- Building the GPT-Powered Recommendation System to recommend mindfulness & Relaxation techniques based on users' queries
- Predefined categories for better personalization – optional to select
- Prompt engineering to fine-tune GPT responses
- Integration with YouTube API to fetch videos
- Ranking most relevant videos per recommended technique
- Simulating queries to generate a dataset
- Exploratory Data Analysis (EDA)
- Enhancing Response Relevance through Unsupervised Learning and Clustering

# **Building the GPT system with YouTube video recommendations**





# Implementation details

## User Query Preprocessing

- Lowercase
- Cleaned of special characters

## Category detection

- Matching the query to one of the selected categories (in any):
  - Mindfulness and Meditation
  - Breathing Exercises
  - Somatic Practices

## GPT-4 prompt & Response generation

- Dynamic prompts based on category (if selected)
- Structured recommendations  
(meaningful **title** + **2 - 3 techniques** with description)



# Prompt Engineering for Better GPT-4 Responses

## Response Format

- Title based on user's query and selected category
- At least 2 techniques
- For each technique:
  - Summary of the technique
  - How can it help based on user query
  - How to apply it

# From GPT recommendations to YouTube videos

## Techniques for Relieving Anxiety and Improving Focus

### Recommendations

1. **Mindful Breathing:** Mindful breathing is a simple yet effective technique for anxiety relief and focus improvement. The idea behind this method is to focus your attention on your breath, the inhale and exhale. This helps to anchor your mind in the present moment, alleviating feelings of anxiety and heightening focus. Here's how to do it:
  - Find a quiet, comfortable place to sit or lie down.
  - Close your eyes and take slow, deep breaths.
  - As you breathe in, feel your abdomen rise and as you breathe out, feel it fall.
  - Keep your attention focused on your breath. If your mind wanders, gently bring it back to your breathing.

#### Extracting Keywords

Filtering out short words from:

- Title
- Technique name

#### Fetching YouTube videos

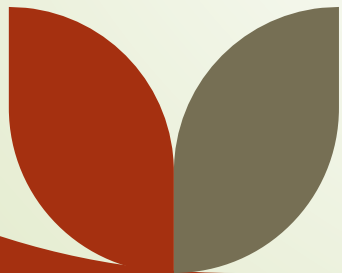
- Integration with YouTube API  
Max 10 results per query with keywords

#### Video Recommendations

- 3 most relevant videos for each technique  
(TF-IDF & Cosine Similarity between *query text* and *preprocessed video title+description*)

Query = "What can I do to relieve anxiety and stay focused?"

# Exploring and improving the system





# Simulating Data for Exploration

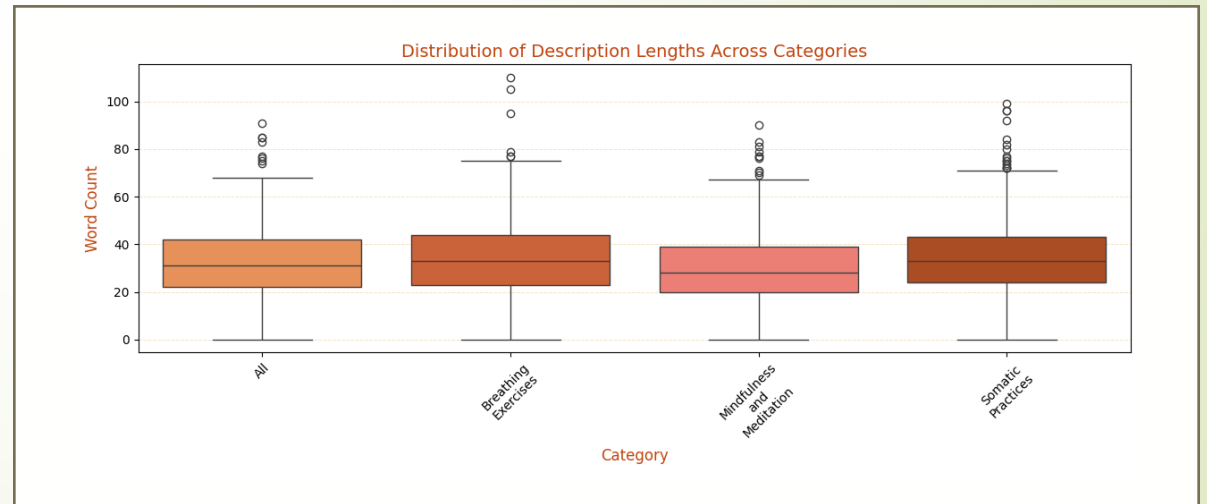
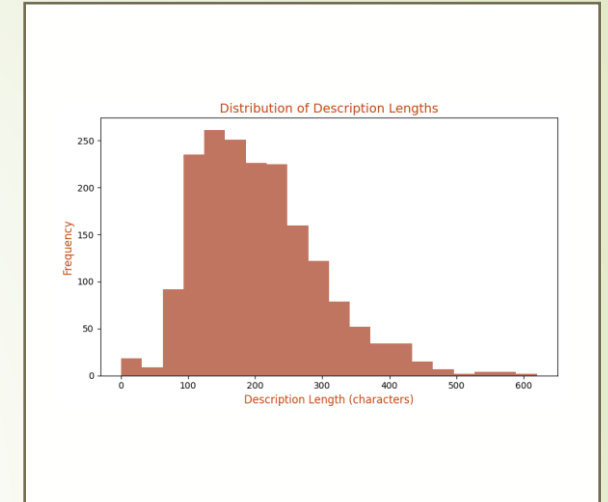
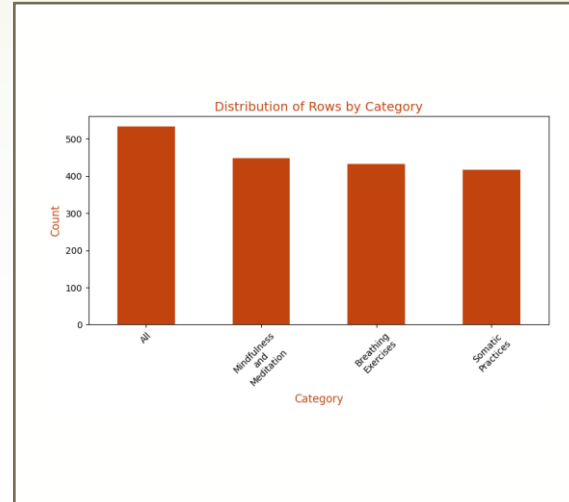
- Simulated 250 realistic user queries
- Generated GPT-4 recommendations for each query, for 3+1 categories (3 specific categories + 1 default “All” category)
- Extracted:
  - Technique name
  - Description
  - Keywords
- (1832, 6)

Query ID	Query	Category	Technique	Description	Keywords
183	Steps to make mindfulness part of your daily r...	Somatic Practices	Body Scan Meditation	This is a powerful mindfulness technique that ...	body scan meditation integrating mindfulness i...
180	Ways to improve mindfulness while multitasking	Breathing Exercises	Box Breathing during Multitasking	This technique can help maintain a steady focu...	breathing during multitasking enhancing mindfu...
182	How to find calmness in unexpected disruptions	Mindfulness and Meditation	Meditative Breathing	This technique can be used to instantly bring ...	meditative breathing maintaining calm amidst u...
107	How to recognize and release tension in your body	Breathing Exercises	Box Breathing	This technique can help reduce stress and impr...	breathing recognizing releasing body tension t...
155	Practical steps to develop a stronger sense of...	All	Mindfulness Meditation	Mindfulness meditation helps you develop a str...	mindfulness meditation developing stronger sen...
181	Tips for staying present when interacting with...	Breathing Exercises	Mindful Breathing	This technique is a cornerstone of mindfulness...	mindful breathing staying present grounded dur...
136	How to approach conflict resolution with mindf...	All	Mindful Observation	This technique involves observing your own tho...	mindful observation mindful conflict resolutio...
189	Tips for calming the mind before important events	Breathing Exercises	Deep Breathing	Deep breathing helps to slow down your heart r...	deep breathing breathing techniques calm your ...
142	Practical ways to strengthen your emotional aw...	Breathing Exercises	Conscious Breathing	Conscious breathing is simply being aware of y...	conscious breathing enhancing emotional awaren...

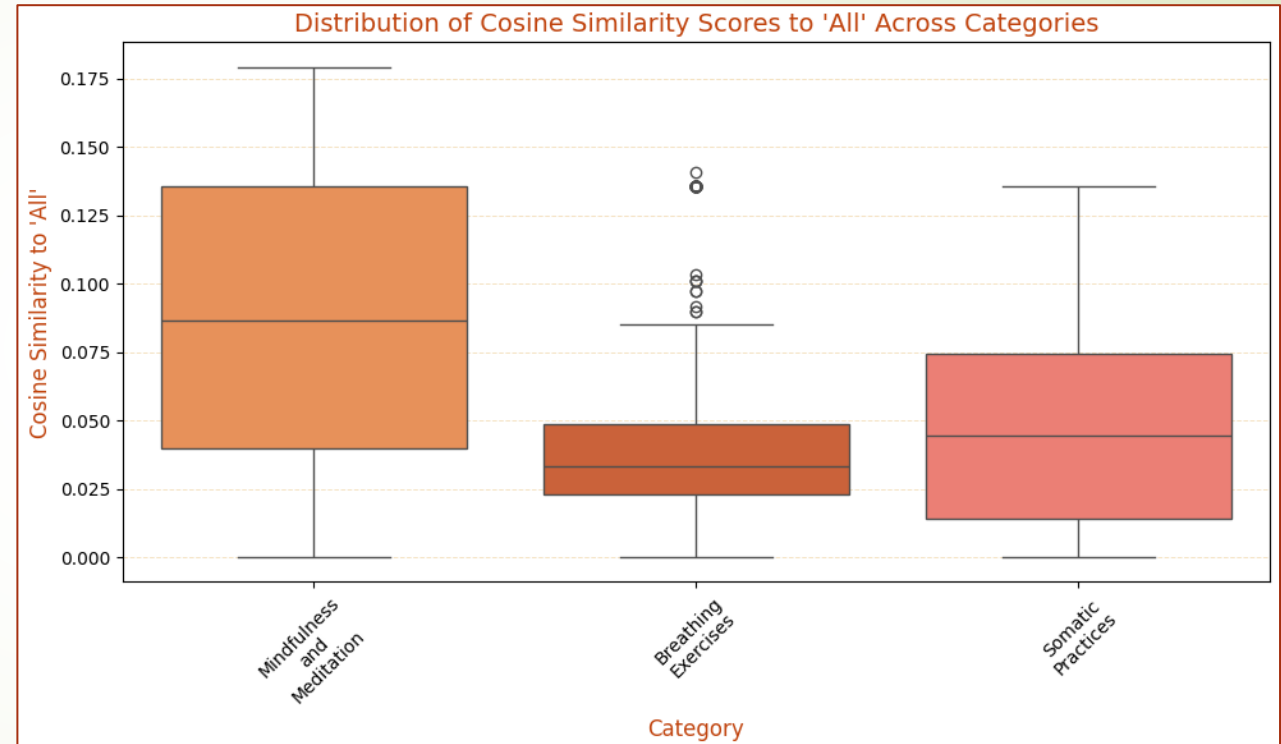
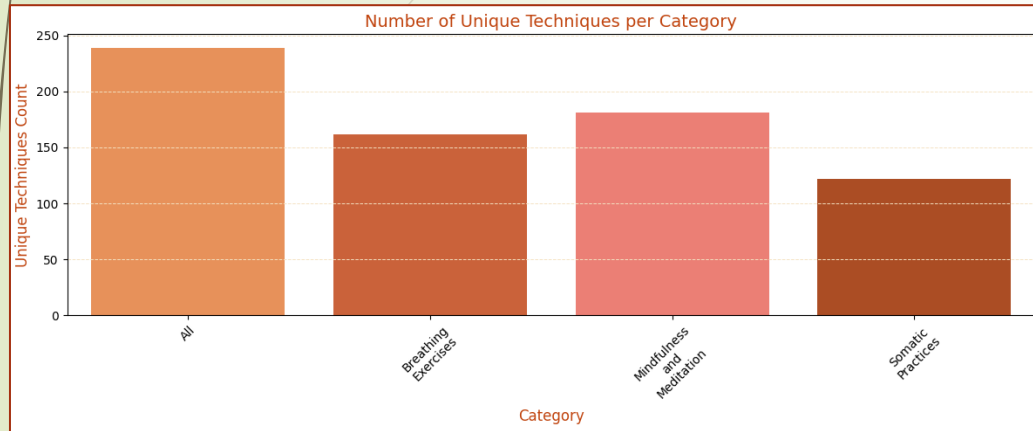


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# Distribution of Data and Description Lengths



# Analysis of Techniques and Cosine Similarity Across Categories



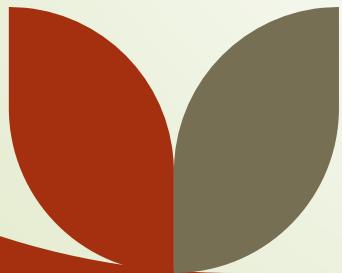
TF-IDF vectorizer on techniques for specific categories Vs "All"

ANOVA

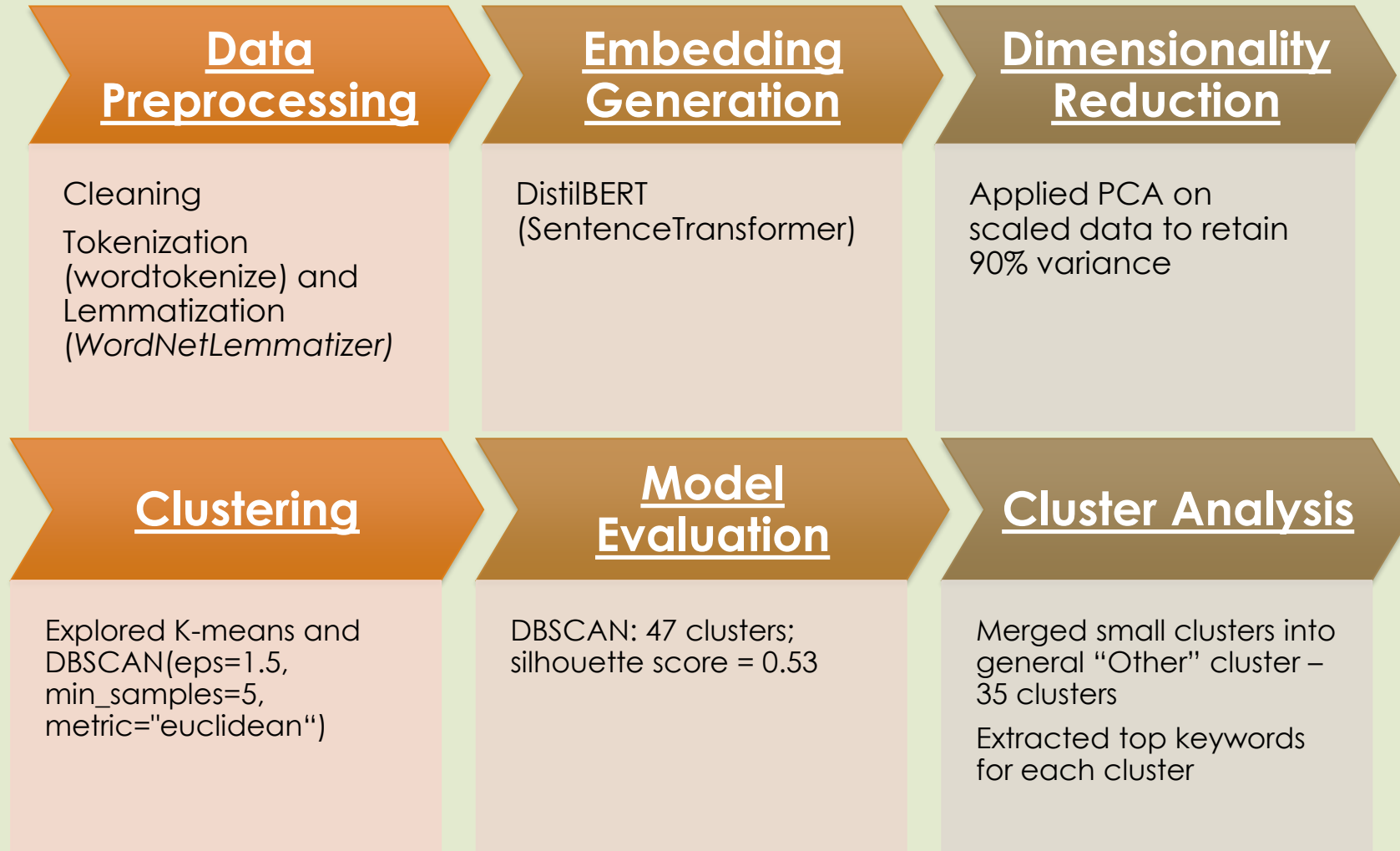
F-Statistic = 114,85

P-value = 1.20995e-46

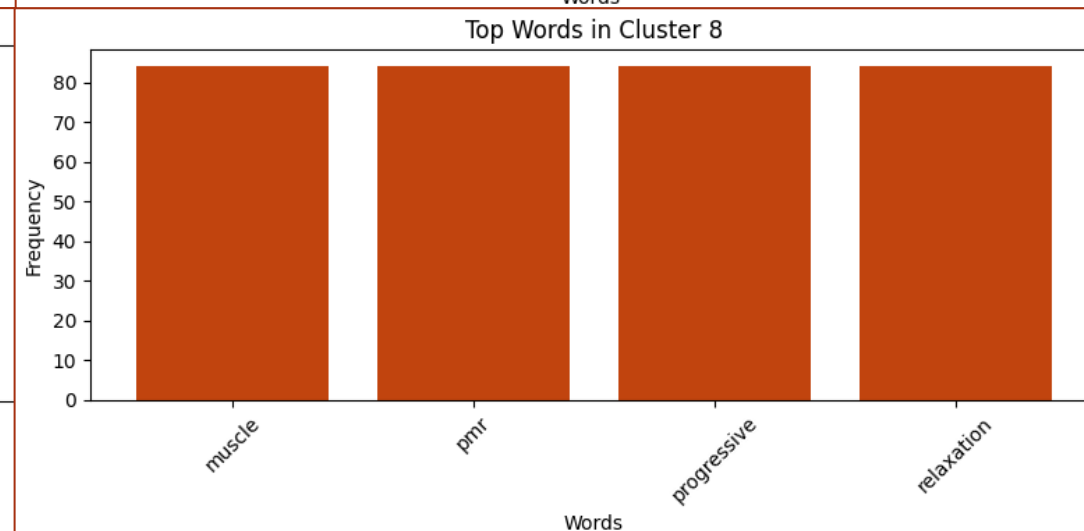
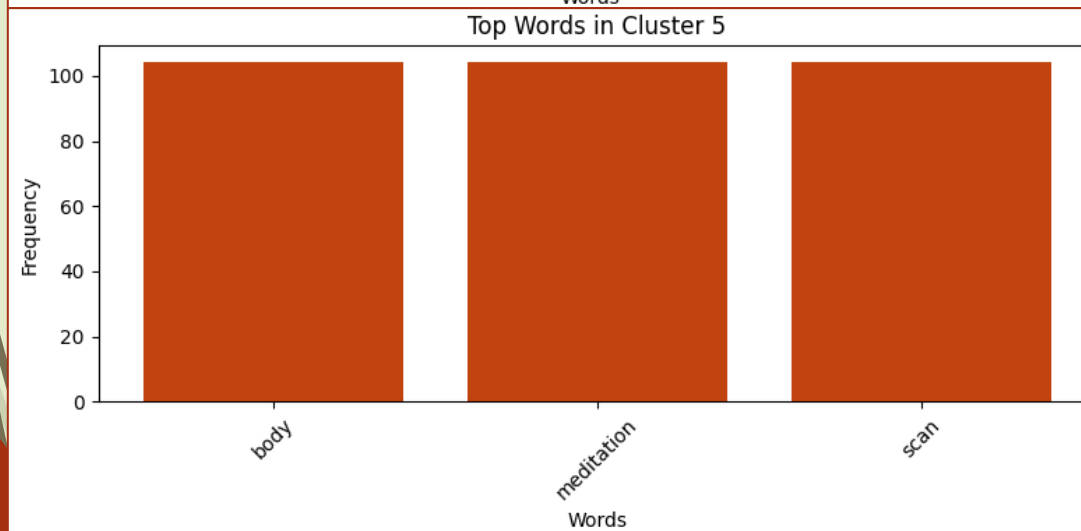
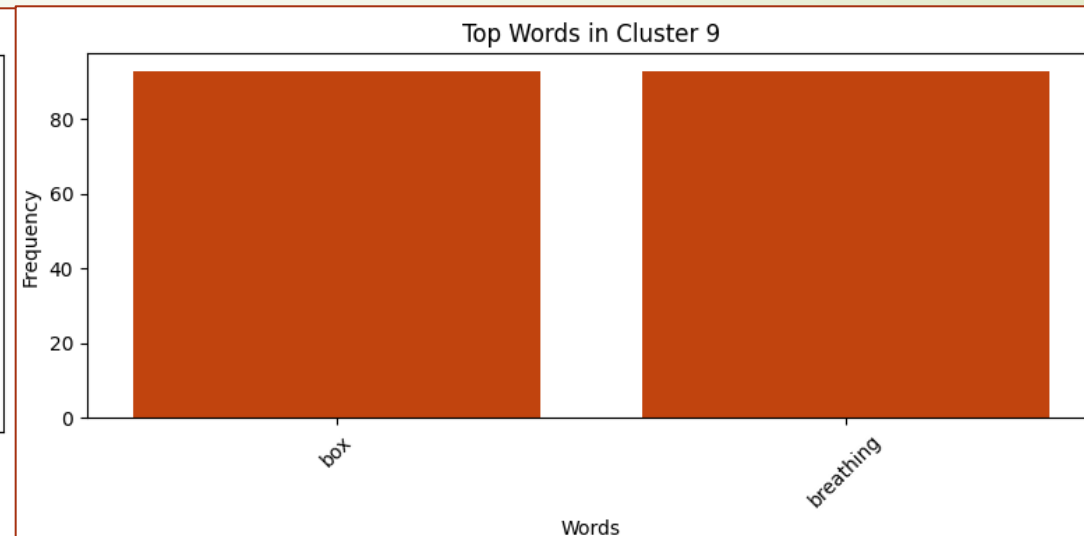
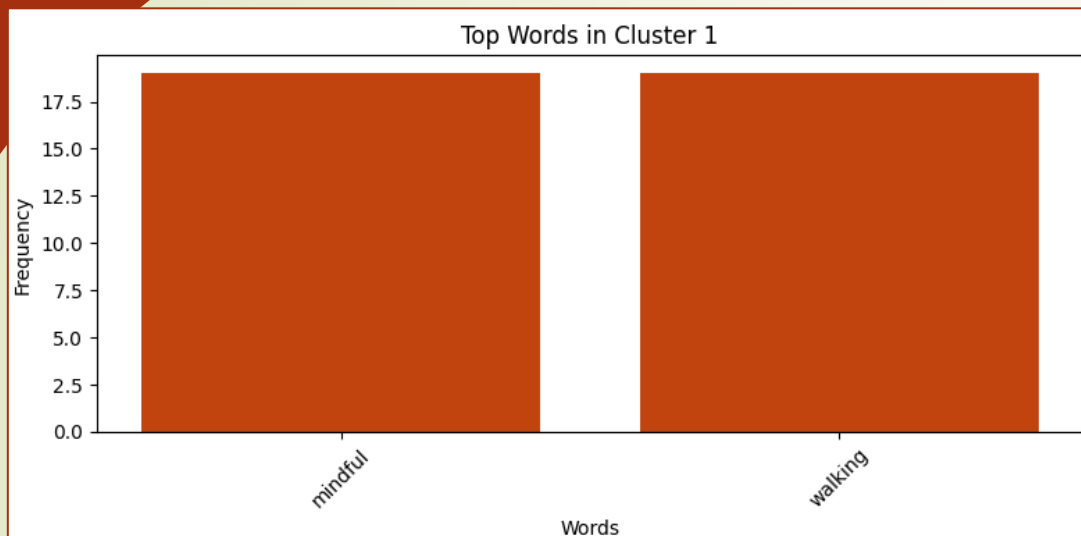
**Can we enhance GPT  
recommendations  
using Clustering  
Techniques?**



# Unsupervised Learning Workflow







From 612 unique techniques to 35

# Key Insights

GPT-Based Recommender  
System with YouTube API  
integration

Impact of Categories on  
GPT Responses

Structured GPT  
recommended Techniques  
into Cohesive Clusters using  
Unsupervised Learning





# Next Steps

- Integrate Clusters into GPT's workflow:
  - Leverage clustered techniques to provide more cohesive recommendations
  - Map user queries to cluster themes for more personalized outputs
- Enhance Queries Preprocessing (stop words and lemmatization)
- Refine prompt design
  - From a highly specific prompt architecture, focused on Mindfulness and Relaxation, to a broader prompt.
  - Expanding focus areas to include other domains of well-being
- Introduce new categories to broaden the spectrum of generated responses, leading to more varied and meaningful recommendations
- Simulate Queries with this generalized system
  - Trying a free model (DeepSeek)
- Repeat Clustering and evaluate the impact of these implementations



# Thank you

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