Moga Yoga Huddle

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Background



Singapore

More turn to mindfulness, mental wellness programmes to cope with stress from COVID-19

MORE CORPORATE WORKSHOPS

Yoga and meditation studios told CNA that they have seen a similar situation – mindfulness classes, which tend to be in small groups, are oversubscribed.

The pandemic has taken a toll on the mental well-being of Singaporeans and has driven a demand for meditation/yoga apps or classes.

MENTAL WELL-BEING AND HEALTH – NOW COMPARED WITH BEFORE CIRCUIT BREAKER Mental well-being Worsened Somewhat much more worsened change improved improved

Singapore

50%

Pandemic blues drive demand for mental health apps in Singapore



- Opportunity for customer base expansion
- Need to tailor advertisements to promote yoga as a coping strategy / self-care tool









Subreddit Classificationr/yoga vs r/Meditation



NLP Classification





Aims

- → Identify top predictors for r/yoga
 - Investigate yoga enthusiasts wants and needs
- → Identify trending words for yoga or common trending words for both subreddits
 - ◆ To tailor advertisements
 - Possibly target meditation seekers to consider taking up yoga





Scraping Reddit Data

1500 posts

r/yoga

1500 posts

r/Meditation

Scrapped backwards from **2021-12-31**

Data cleaning

01

Null Values

Dropped all the rows with null values.

03

Duplicates removal

Some authors reposted updates on the same topic or repetition of posts. These will be removed and only keep the latest post.



02

Text/Image/Video selection

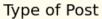
In this analysis, we will focus on text only. Dropped all image and video posts.

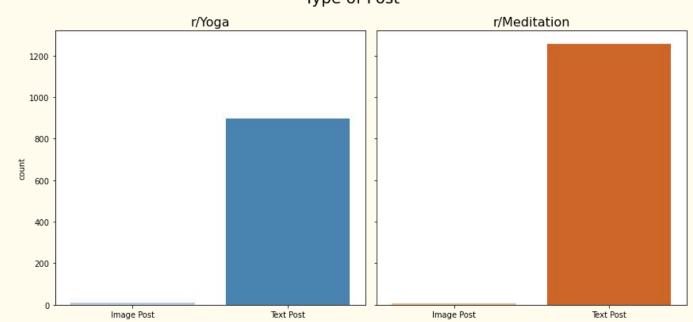
04

Removed postsSome author deleted

Some author deleted their posts. These will be dropped as well.

EDA: Type of post





Most posts in both yoga and meditation are text posts. We will remove those that are image posts for this study.



EDA: Word Length

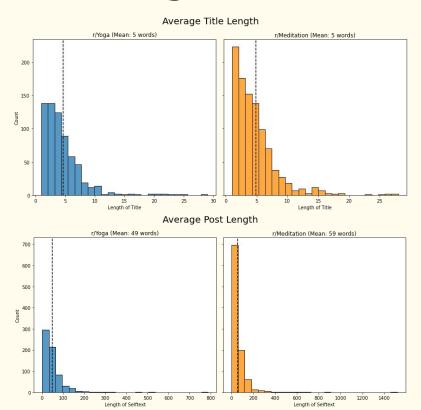
Title length

Meditation has higher number of words in the title compared to yoga.

Post length

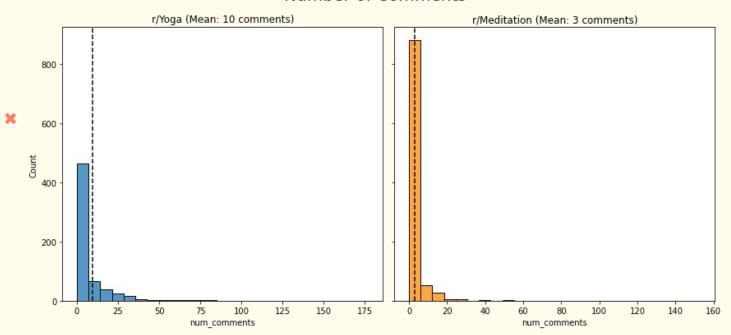
Similarly, Meditation posts are longer than yoga posts.

→This makes it easier to predict whether a post comes from meditation in the classifier since there are more features to study.



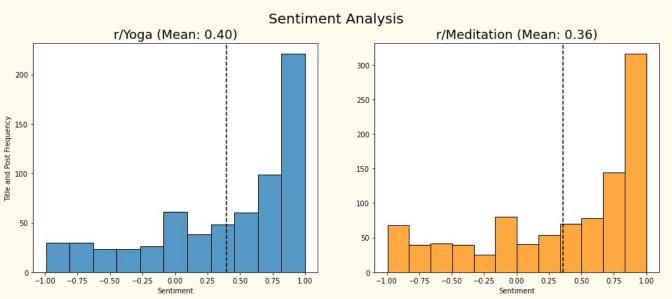
EDA: Number of comments

Number of Comments



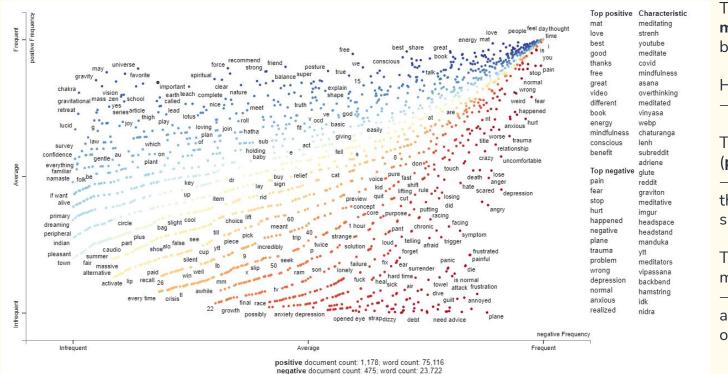
From the histogram, yoga posts have higher number of comments compared to meditation subreddit, indicating higher participation from yoga users.

EDA: Sentiment Analysis



The sentiment is mainly positive for both r/yoga and r/meditation with yoga slightly more **positive** which is a good motivation to promote new users to join. We also see higher number of title and post leaning towards positive sentiment as well which further strengthens the direction.

EDA: Sentiment Analysis



The words in **blue** (+) such as **mat**, **love**, **best** are used in both r/yoga and r/meditation.

Higher frequency in meditation \rightarrow lengthy posts.

The top words in red(-) such as (pain) come from r/yoga

→ some people struggle to do
the poses w/o instructor
supervision.

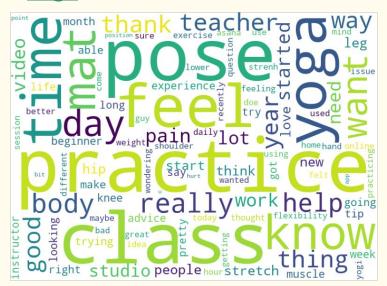
Top negative word (**fear**) from meditation

→ experience fear when they are meditating and is trying to overcome it.

EDA: Word Cloud

Yoqa

×



From Yoga subreddit title+post, we can see some common words such as **practice**,**class**,**pose**,**feel**,**time** and **mat**.

Meditation



From Meditation subreddit title+post, we can see some common words such as

feel,thought,know,mind,help, people,day and time.

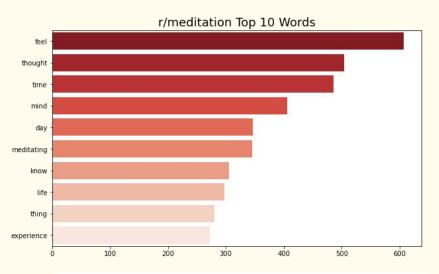
EDA: top words

Yoga

r/yoga Top 10 Words pose practice dass feel time yoga mat day year know 100 200 50 150 250 300

Top words from r/yoga are **pose**, **practice**, **class** and also **mat**. I think the community likes to share on different poses. In terms of marketing, we can entice users by giving out free mats etc.

Meditation



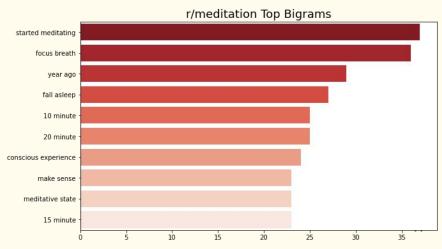
Top words from r/meditation focuses on **feeling, thoughts, mind** etc. To promote yoga to this group, we need to incorporate mind empowerment as well.

EDA: top bigram

<u>Yoga</u>

Top bigram for r/yoga are type of poses, tools like **foam roller** or video based tutorials from **dog app** or **youtube**. It could be an interesting selling point to promote packages with foam roller or kickstart virtual yoga classes for people who are interested in yoga.

Meditation



Top bigram for r/meditation are **breathing** related, **sleep** improvement, and duration of meditation. This can be a good point to bring up as yoga also helps sleep quality and improve **mind consciousness**.

Pre-processing Model Selection

Pre-processing workflow

02

extremely sore after my first hot vinyasa clas...

online new year's offerings? hello yogis, anyb...

yoga with covid hi all. i be diagnose with cov...

my heart be so full. i just come from a 75 min...

down dog app - star to side lunge okay, down d...

sacred cacao ceremony i be usually a straight ...

men's yoga suggestions? hello everyone i have ...

question on get start i be interested in get s...

result of yoga on your body/fitness level i ha...

pelvic tilt and yoga practice. just want to sh...

selftext_lem

title + self-text

Lemmatization (Focusing on nouns)

Removal of stopwords (via gensim)

03

subreddit		combined				
3	1	extremely sore after my first hot vinyasa clas				
4	1	online new year's offerings? hello yogis, anyb				
6	1	yoga with covid hi all. i was diagnosed with c				
10	1	my heart is so full. i just came from a 75 min				
11	1	down dog app - star to side lunge okay, down d				
13	1	sacred cacao ceremony i am usually a straight				
15	1	questions on getting started i am interested i				
17	1	men's yoga suggestions? hello everyone i have				
18	1	results of yoga on your body/fitness level i h				
19	1	pelvic tilt and yoga practice. just want to sh				

selftext_gensim extremely sore hot vinyasa class super shape 9... online new year's offerings? hello yogis, anyb... yoga covid hi all. diagnose covid week it's re... heart full, come 75 minute class sob end, teac... dog app - star lunge okay, dog app finally bea... sacred cacao ceremony usually straight hot yog... question start interested start yoga. look str... men's yoga suggestions? hello convince husband... result yoga body/fitness level recently yoga a... pelvic tilt yoga practice, want share obvious ...

Model selection

Model	Vectorizer	Accuracy (Train)	Accuracy (Test)	Precision (Test)	Recall (Test)	F1 Score	ROC AUC
Logistic Regression	CountVect	0.9945	0.8538	0.875	0.7557	0.811	0.9275
Logistic Regression	TFIDF	0.9513	0.8726	0.9766	0.7102	0.8224	0.9496
Naive Bayes	CountVect	0.941	0.8703	0.8497	0.8352	0.8424	0.9446
Naive Bayes	TFIDF	0.9237	0.8679	0.9412	0.7273	0.8205	0.9512
Random Forest	CountVect	1.0	0.875	0.8868	0.8011	0.8418	0.9204
Random Forest	TFIDF	1.0	0.8656	0.879	0.7841	0.8288	0.929

Our aim is to maximise the true positives (Correctly classifying r/yoga posts)

We focus on the following metrics:

- Precision (How many did we catch?)
- Recall (How many did we miss?)
- F1 score; Finding a right balance between Precision and Recall





Model Insights

Top Probabilities Predictors - r/yoga



Practice 0.73%



Pose 0.67%



Class 0.64%



Feel 0.52%



Body 0.37%



Teacher 0.37%



Mat 0.33%



Pain 0.31%

Concerns & Challenges by Yoga Enthusiasts

Body Posture

- Incorrect posture during self practice
- Difficult for beginner: Downward dog



Effect & Feeling

- Body soreness or pain after yoga
- Hip tight

Wrongly stretching your body or doing incorrect asanas, and breathing in an incorrect manner while exercising, can be detrimental to your health. Incorrect postures could lead to acute pain and long-standing chronic problems, say doctors.

Additional Co-Instructor

Provide guidance on **body posture** during the class when
main instructor is doing the
yoga



0

Member Privilege (1)

Complimentary Yoga Mat

For new member sign up with our Yoga Studio's membership & classes



r/yoga - r/Meditation

Top **50** Predictors



22 Unique Words

28 Commonality Words

Unique Trending Words - r/yoga



 Flexibility of back or shoulder

0

Lacking of flexibility

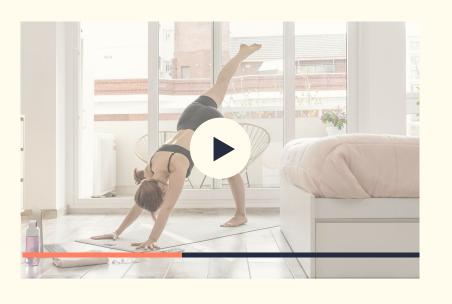


- Searching for yoga video
- For male or variety of yoga postures

Member Privilege (2)

Exclusive Yoga Videos Access

Members can access to latest Yoga Videos via website and phone app 24/7 anywhere





Conclusions & Recommendations



Text Classifier Model

Improve Efficiency and Effectiveness of Marketing Team



Top Predictors

Identify the key words that can improve our product and services



Trending Words

Develop Marketing Strategies as per trending



Commonality

Targeting on new segment that have in common interest

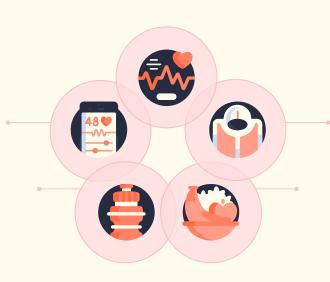
Future Enhancements

More Data

Get data from **Hot** and **Top** Sections of subreddit

Different Models

Explore SVM, Gradient Boosting and Deep Learning Models



Sentiment Analysis

On **Comments** section on subreddit posts

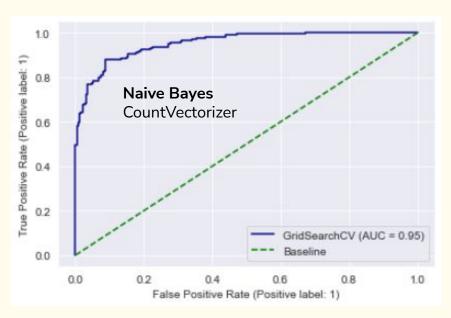
Update Stop Words

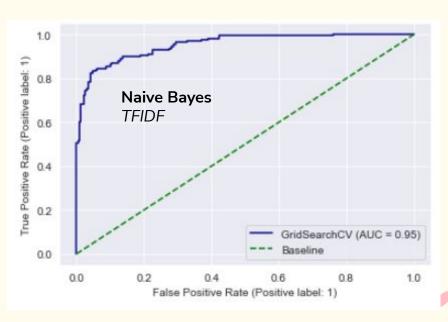
Input less meaningful words into stop words list

Thanks



Differentiating our top-performing models

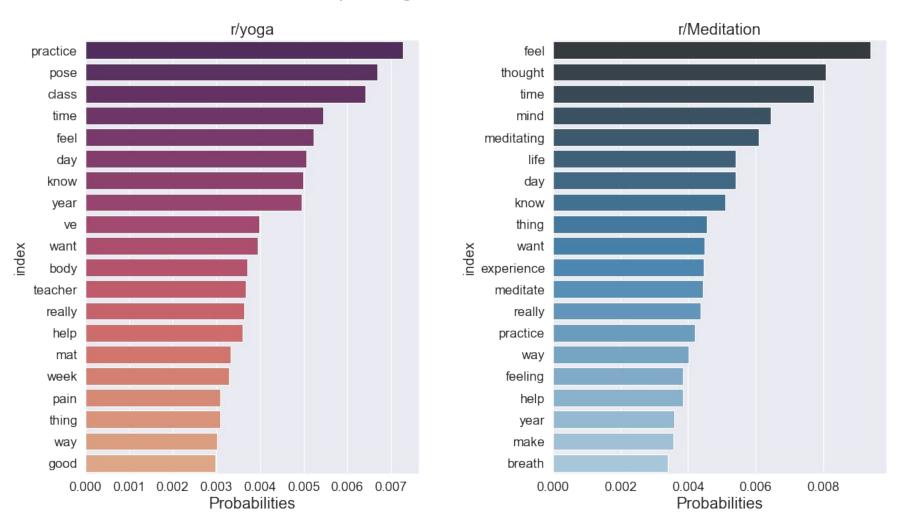




F1 scores provide a snapshot of model performance relative to a fixed threshold (Our preference)



Top 20 Highest Probabilities Words



Top Unique and Common Predictors on r/yoga & r/Meditation

