

Moga Yoga Huddle

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Background



Singapore

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

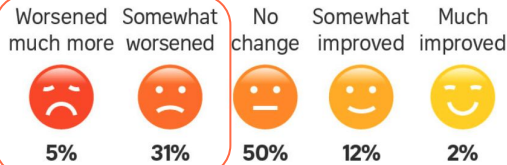
MORE CORPORATE WORKSHOPS

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



Pandemic blues drive demand for mental health apps in Singapore

The Most Popular Yoga and Mindfulness Apps

Number of downloads of yoga, meditation and mindfulness apps in 2021 worldwide (in millions)*



* Google Play & Apple stores, Jan 1 - June 21, 2021
Source: Airnow Data



Airnow Data

statista

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

Subreddit Classification- r/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.

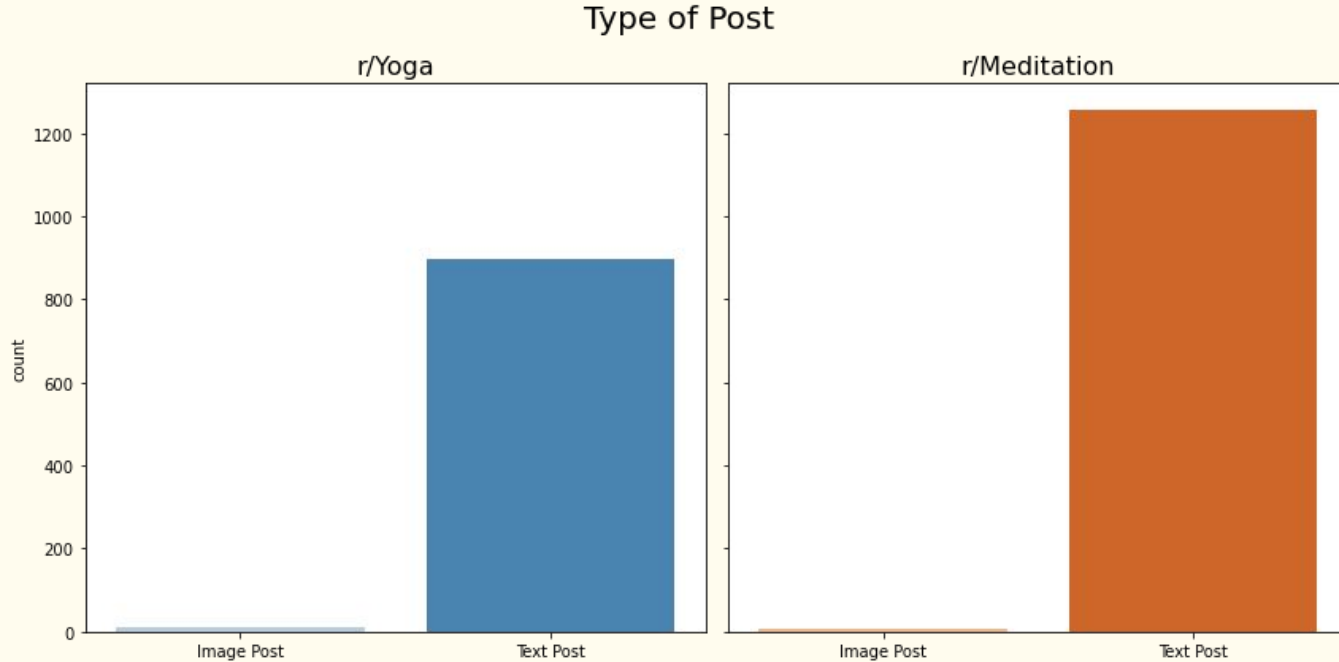
04

Removed posts

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: Data Exploratory Analysis



EDA: Word Length

+16 %

Title length

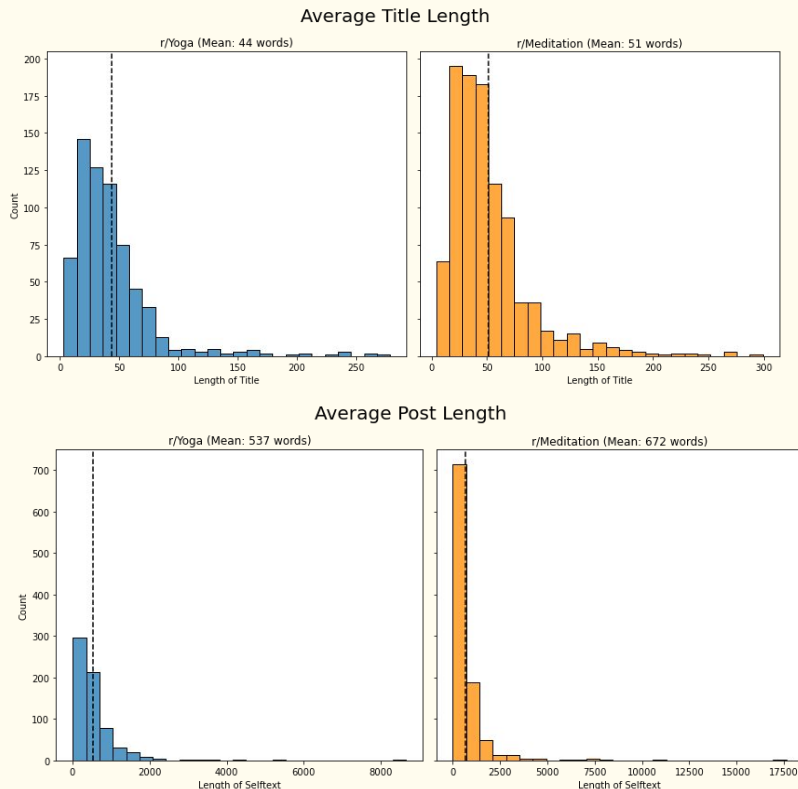
Meditation has higher number of words in the title compared to yoga.

+25 %

Post length

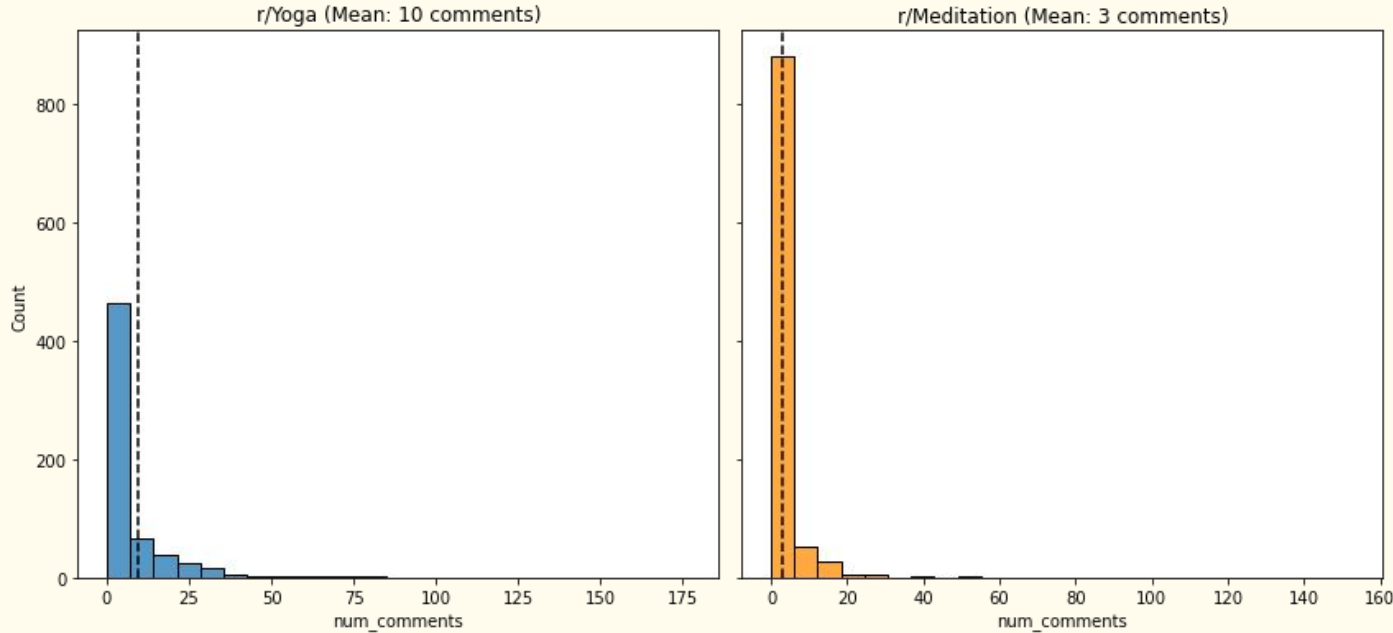
Similarly, Meditation posts are longer than yoga posts.

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



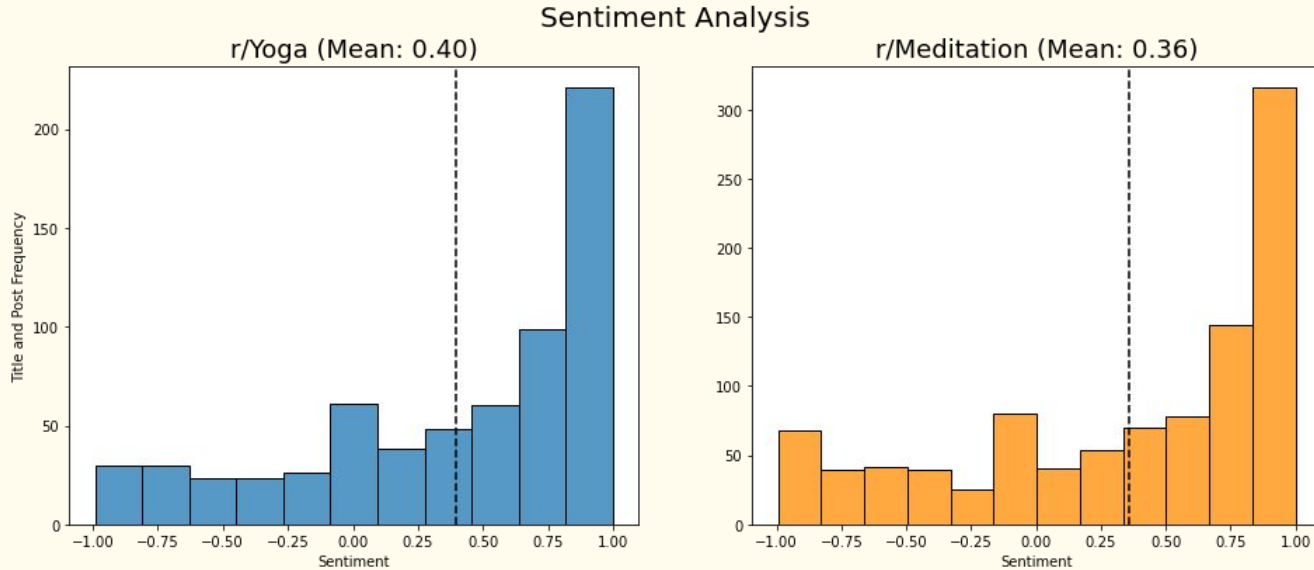
EDA: Number of comments

Number of Comments



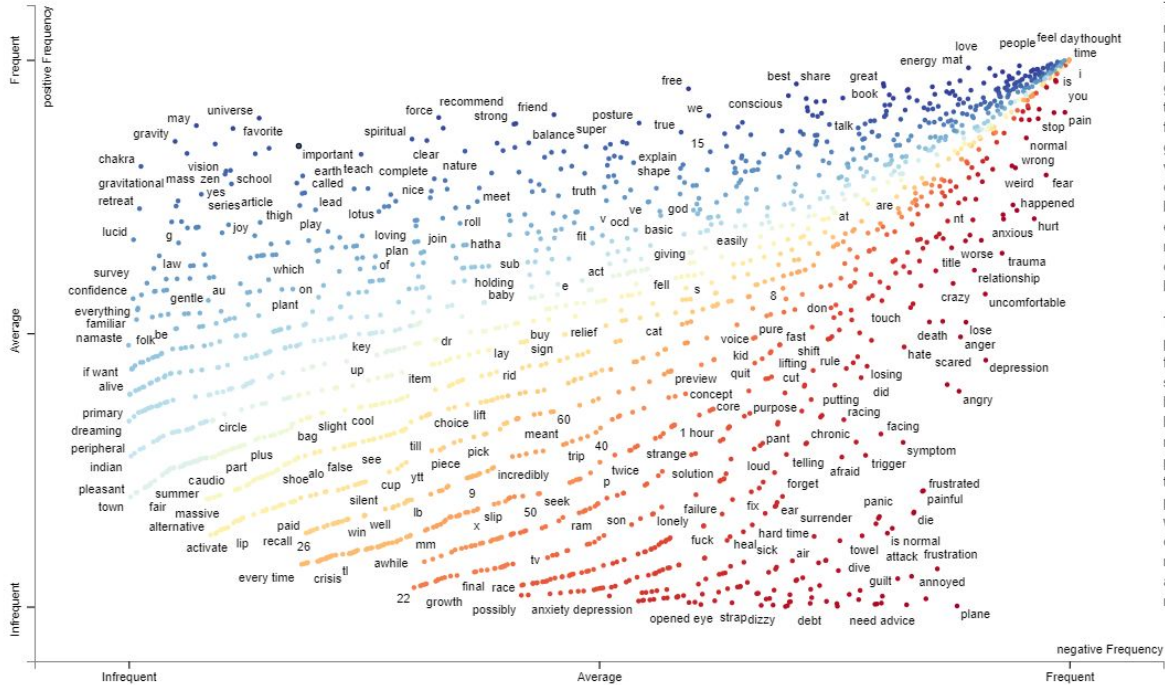
From the histogram, yoga posts have higher number of comments compared to meditation subreddit, indicating **higher participation** from yoga users.

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



Top positive

mat
love
best
good
thanks
free
great
video
different
book
energy
mindfulness
conscious
benefit

Characteristic

meditating
strenh
youtube
meditate
covid
mindfulness
asana
overthinking
meditated
vinayasa
webp
chaturanga
lenh
subreddit
adriene

Top negative

pain
fear
stop
hurt
happened
negative
plane
trauma
problem
wrong
depression
normal
anxious
realized

glute
reddit
graviton
meditative
imgur
headspace
headstand
manduka
ytt
meditators
vipassana
backbend
hamstring
idk
nidra

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

Higher frequency in meditation
→ 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.

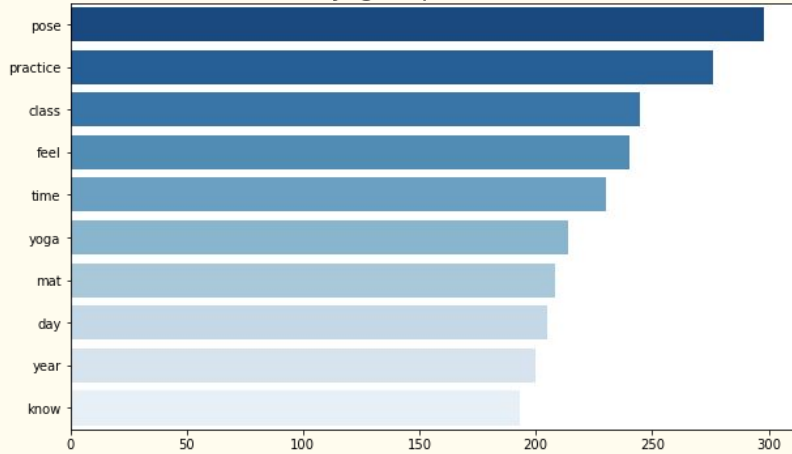


From Meditation subreddit title+post, we can see some common words such as **feel,thought,know,mind,help, people,day** and **time**.

EDA: top words

Yoga

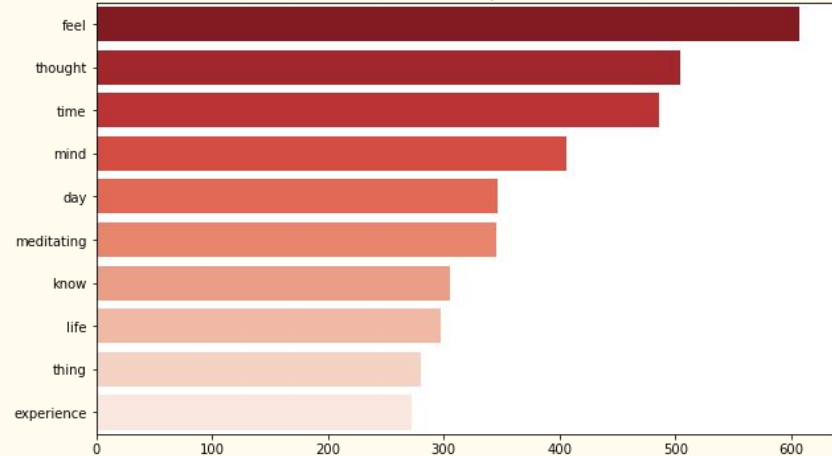
r/yoga Top 10 Words



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

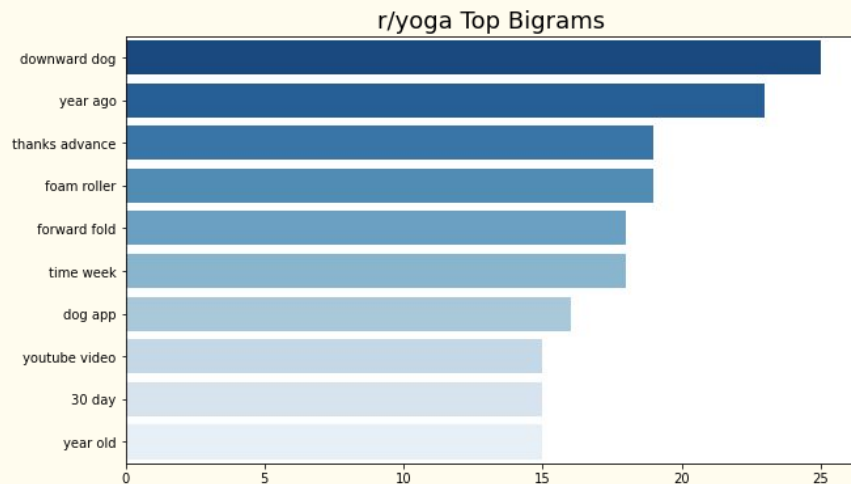
r/meditation Top 10 Words



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.

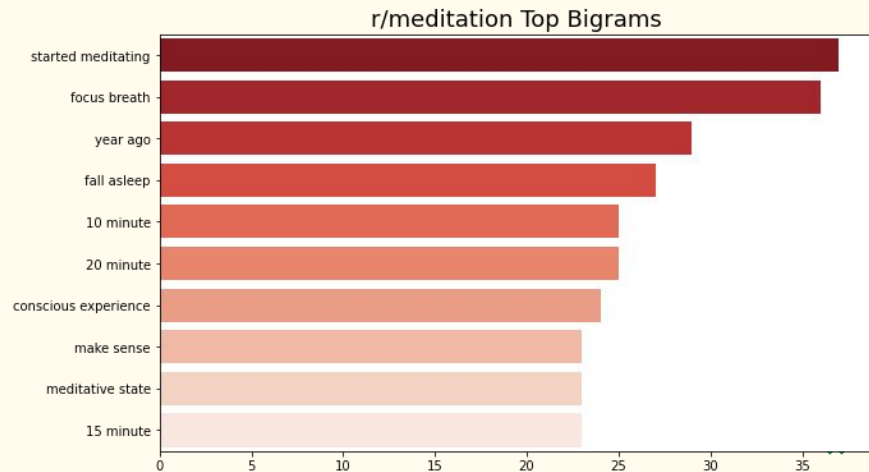
EDA: top bigram

Yoga



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

01

title + self-text

02

Lemmatization
(Focusing on nouns)

03

Removal of stopwords
(via *gensim*)

subreddit		combined	selftext_lem	selftext_gensim
3	1	extremely sore after my first hot vinyasa clas...	extremely sore after my first hot vinyasa clas...	extremely sore hot vinyasa class super shape 9...
4	1	online new year's offerings? hello yogis, anyb...	online new year's offerings? hello yogis, anyb...	online new year's offerings? hello yogis, anyb...
6	1	yoga with covid hi all. i was diagnosed with c...	yoga with covid hi all. i be diagnose with cov...	yoga covid hi all. diagnose covid week it's re...
10	1	my heart is so full. i just came from a 75 min...	my heart be so full. i just come from a 75 min...	heart full. come 75 minute class sob end. teac...
11	1	down dog app - star to side lunge okay, down d...	down dog app - star to side lunge okay, down d...	dog app - star lunge okay, dog app finally bea...
13	1	sacred cacao ceremony i am usually a straight ...	sacred cacao ceremony i be usually a straight ...	sacred cacao ceremony usually straight hot yog...
15	1	questions on getting started i am interested i ...	question on get start i be interested in get s...	question start interested start yoga. look str...
17	1	men's yoga suggestions? hello everyone i have ...	men's yoga suggestions? hello everyone i have ...	men's yoga suggestions? hello convince husband...
18	1	results of yoga on your body/fitness level i h...	result of yoga on your body/fitness level i ha...	result yoga body/fitness level recently yoga a...
19	1	pelvic tilt and yoga practice. just want to sh...	pelvic tilt and yoga practice. just want to sh...	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%



**List is not exhaustive*

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



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

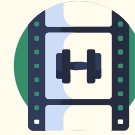


Unique Trending Words - r/yoga



Flexibility

- Flexibility of back or shoulder
- Lacking of flexibility



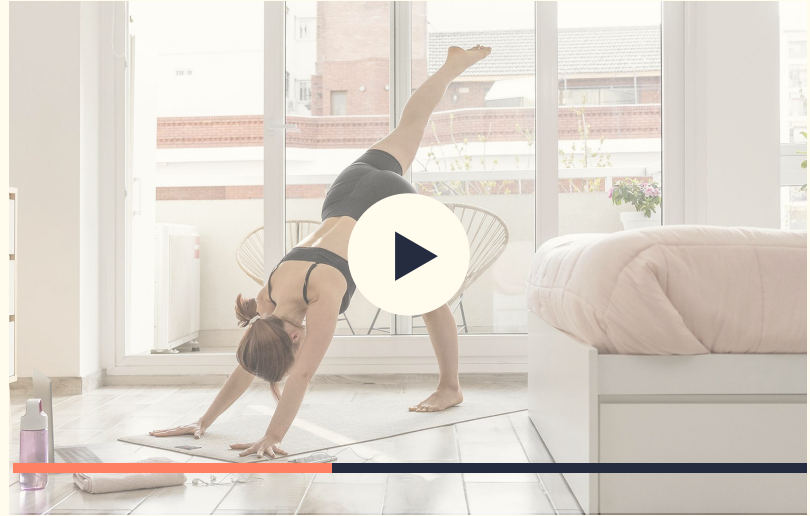
Video

- 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

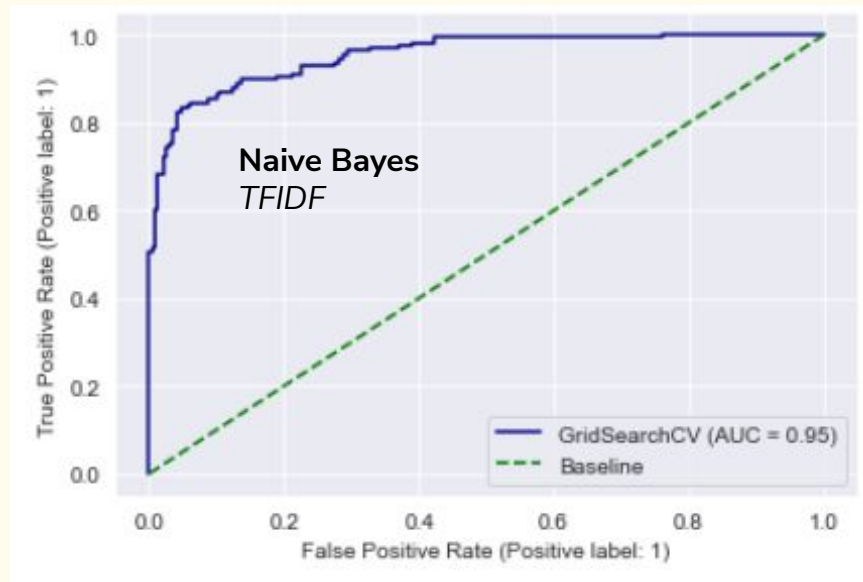
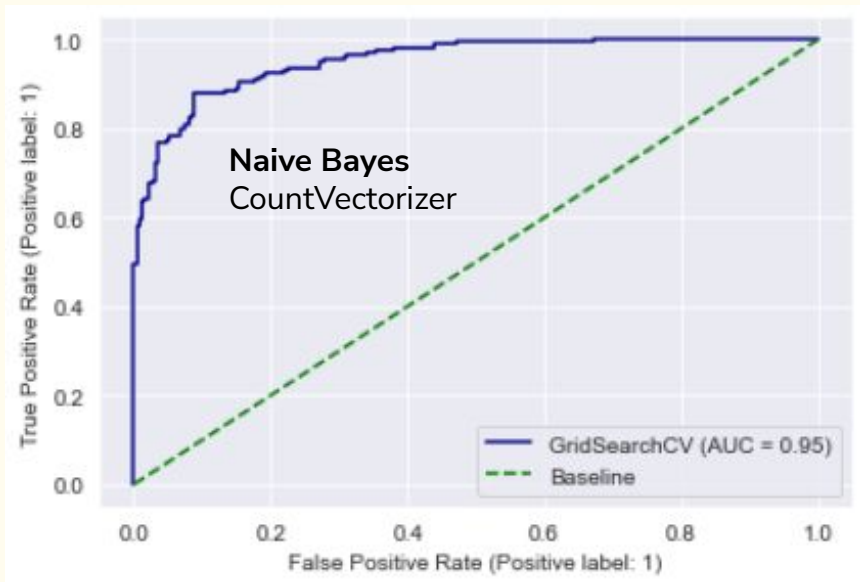
Update Stop Words

Input less meaningful words into stop words list

Thanks



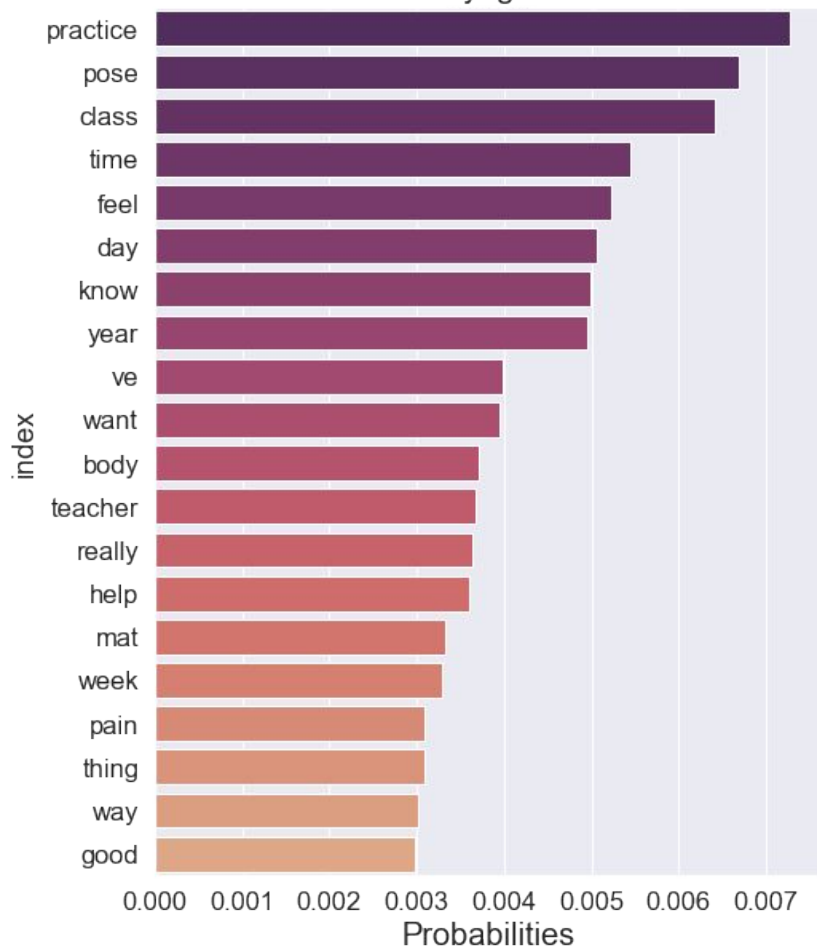
Differentiating our top-performing models



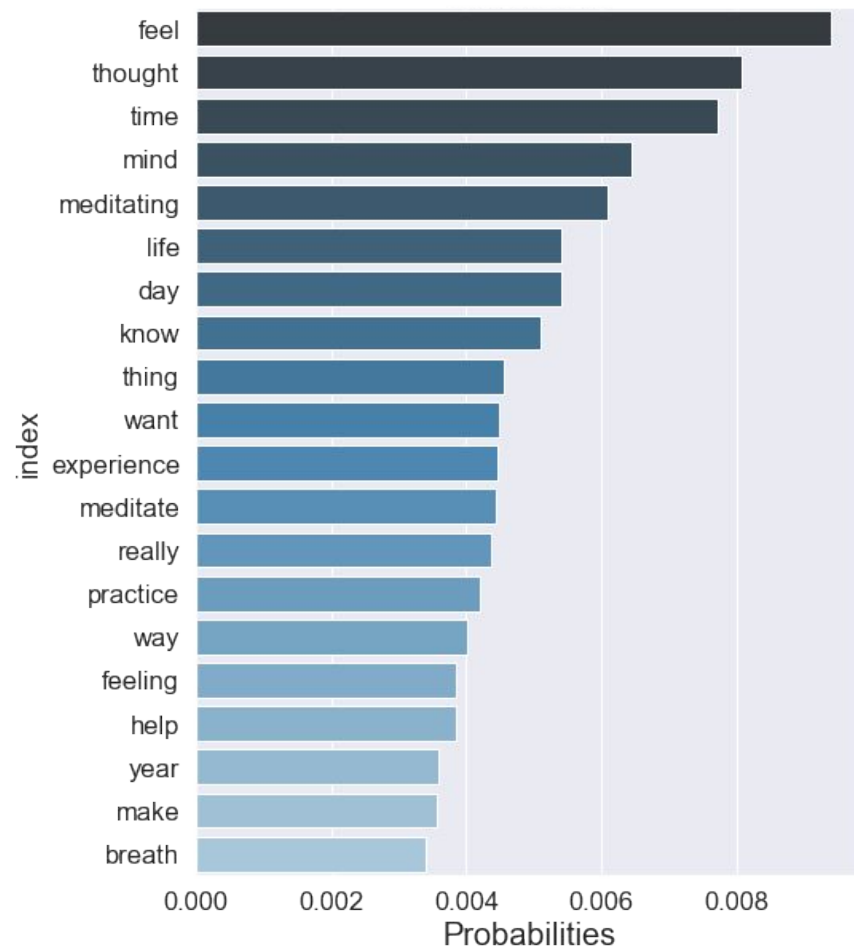
F1 scores provide a snapshot of model performance relative to a fixed threshold (Our preference)

Top 20 Highest Probabilities Words

r/yoga

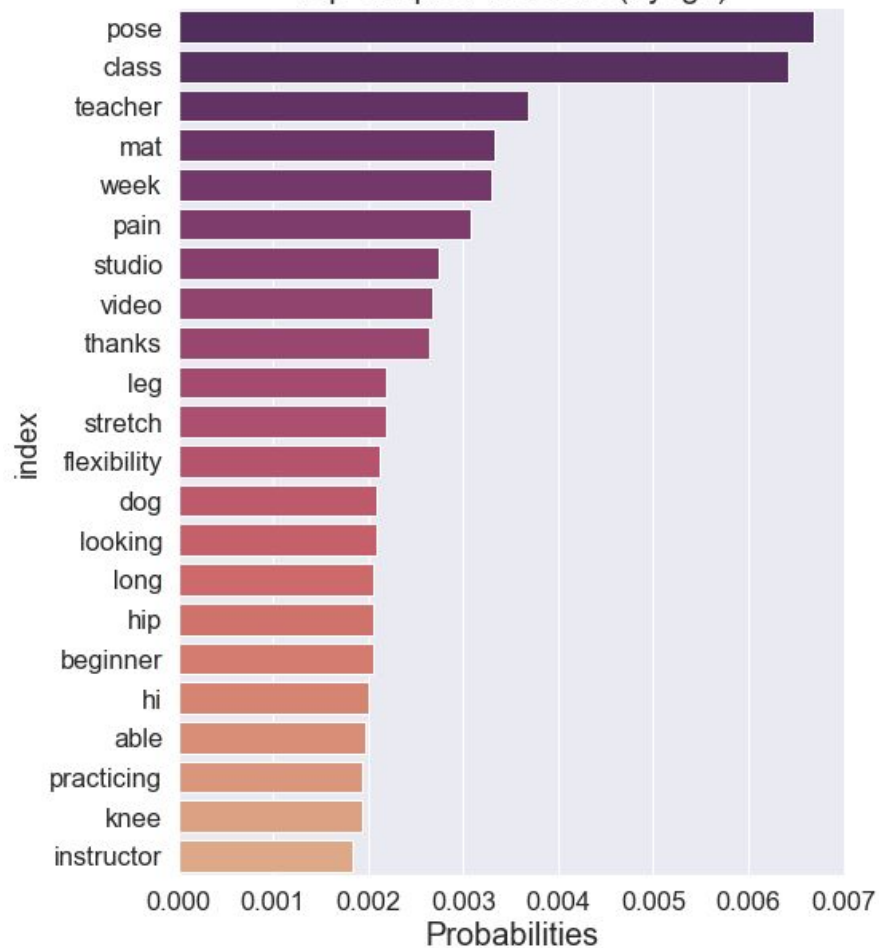


r/Meditation



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

Top Unique Predictors (r/yoga)



Top Commonality Predictors (r/yoga & r/Meditation)

