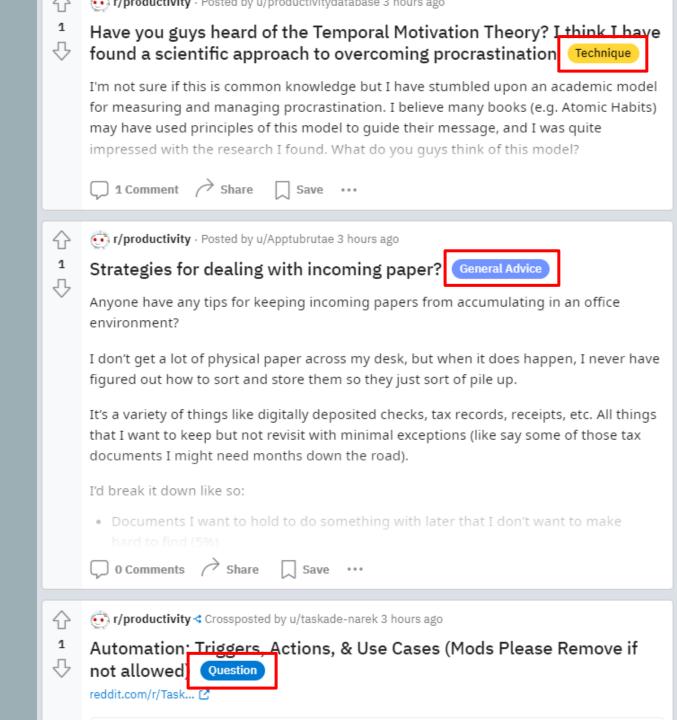
CLASSIFICATION MODEL

For subreddit "Flair" suggestion

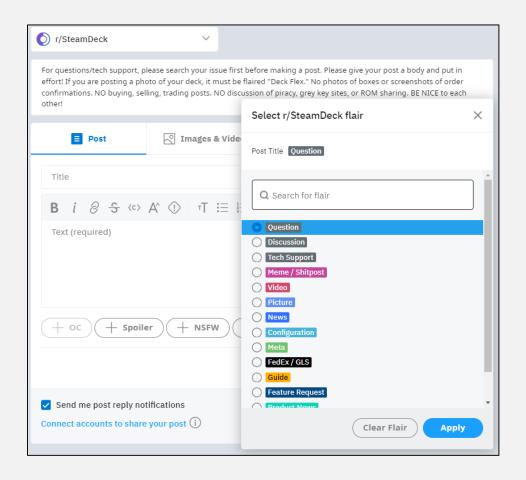
FLAIR

"TAG" of posts in subreddit



THE PROBLEM

Creating new post in subreddit Pick one flair incorrectly Reader confused



THE DATA

Column	Description
Title	Title of post on subreddit
Selftext	Text body of the post
Tag	"Flair" name of subreddit

From Steam Deck subreddit

TAG TO BE CLASSIFIED

Configuration

Discussion

Question

Tech Support

MEGATHREAD

Feature Request

Guide

Hot Wasabi

Meme / Shitpost

Meta

News

Picture

Video

PROCESS

Data collected from subreddit pages

Extract "title", "selftext" and "tag"

Process data



Finalize model and simulate suggestions

Model evaluation and error analysis

Create prediction model using various algorithms

- Remove duplicates
- Using lemmatized/non-lemmatized* words

Tried and reverted

- Remove posts with empty selftext
- Discard selftext
- Tags common words removal
- Combine tags

^{*} Lemmatized = inflected forms of the same word grouped together

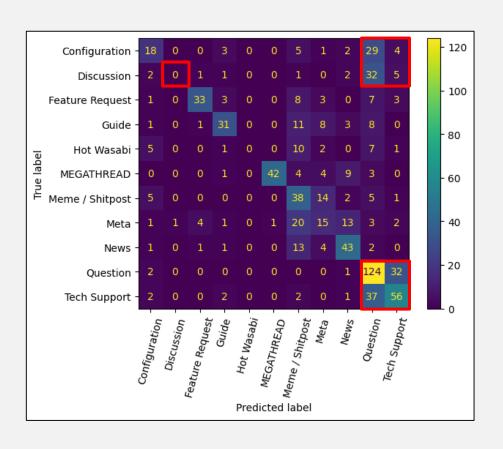
MODEL SELECTION

Precision + Correctness Score (%)

Algorithm	Data	Train data	Test data
Random Forest	Over 20,000 non-lemmatized words from title and selftext	99.7%	50.3%
Naïve Bayes	6,000 non-lemmatized words from title and selftext	86%	51.1%
Logistic Regression	2,000 lemmatized words from title and selftext	73.6%	52.2%
Logistic Regression	1,000 lemmatized words from title and selftext	68%	49.9%

^{*}Words from title and selftext are considered to be different, even if it is the same word

THE ERRORS



- Most errors on
 - Configuration
 - Discussion
 - Question
 - Tech Support
- Some are mostly the same things.
- Many off-topic posts in a tag

FIXING THE PROBLEM

• The model will be used to generate top N tags for new post instead if it doesn't confident enough to pick only one tag.

Actual	Suggestion (suggest 1 tag if confident >= 50%)	Explanation
Guide	Meme / Shitpost (30%)News (12%)Guide (11%)	Model cannot judge, suggests top 3 possible tags, one matched
Meme / Shitpost	Question (13%)Configuration (13%)Tech Support (11%)	Model cannot judge, suggests top 3 possible tags, no match
MEGATHREAD	MEGATHREAD (71%)	Model select MEGATHREAD as a predicted result

RESULT

By setting confident percentage = model performance + some margin

(52.2% + 5% = 57.2%)

Percentage of relevant suggestion

goes up to **78.2%**, which should be enough for the problem

```
# Compare with actual
   for i in range(len(y test)):
       print('Actual:', list(y test)[i], '--- Suggest:', predictions[i])
✓ 0.0s
Actual: Hot Wasabi --- Suggest: ['Meme / Shitpost', 'Meta', 'Question']
Actual: Hot Wasabi --- Suggest: ['Tech Support', 'Configuration', 'Question']
Actual: Guide --- Suggest: ['Meme / Shitpost', 'News', 'Guide']
Actual: Question --- Suggest: ['Question', 'Tech Support', 'Feature Request']
Actual: Guide --- Suggest: ['Question', 'Tech Support', 'Configuration']
Actual: Meme / Shitpost --- Suggest: ['Question', 'Configuration', 'Tech Support']
Actual: Tech Support --- Suggest: ['Tech Support', 'Question', 'Discussion']
Actual: Hot Wasabi --- Suggest: ['Question', 'Meme / Shitpost', 'Configuration']
Actual: Question --- Suggest: ['Question', 'Discussion', 'Tech Support']
Actual: Configuration --- Suggest: ['Guide', 'Feature Request', 'Configuration']
Actual: Feature Request --- Suggest: ['Feature Request', 'Meme / Shitpost', 'Meta']
Actual: MEGATHREAD --- Suggest: ['MEGATHREAD', 'Feature Request', 'Tech Support']
Actual: Question --- Suggest: ['Question', 'Discussion', 'Tech Support']
Actual: MEGATHREAD --- Suggest: ['MEGATHREAD', 'Meme / Shitpost', 'News']
Actual: News --- Suggest: ['News', 'Meme / Shitpost', 'Meta']
Actual: Tech Support --- Suggest: ['Meme / Shitpost', 'Question', 'Meta']
Actual: Discussion --- Suggest: ['Question', 'Meta', 'Meme / Shitpost']
Actual: Question --- Suggest: ['Question', 'Tech Support', 'Meta']
Actual: Guide --- Suggest: ['Guide', 'News', 'Meme / Shitpost']
Actual: Question --- Suggest: ['Question', 'Tech Support', 'Configuration']
Actual: Question --- Suggest: ['Tech Support', 'Question', 'Configuration']
Actual: News --- Suggest: ['News', 'Meme / Shitpost', 'Meta']
Actual: Question --- Suggest: ['Tech Support', 'Question', 'Configuration']
Actual: Question --- Suggest: ['Configuration', 'Question', 'Tech Support']
Actual: Meme / Shitpost --- Suggest: ['Meme / Shitpost', 'Meta', 'News']
```

Confident percentage and number of suggested tags can also be adjusted to achieve even better result.