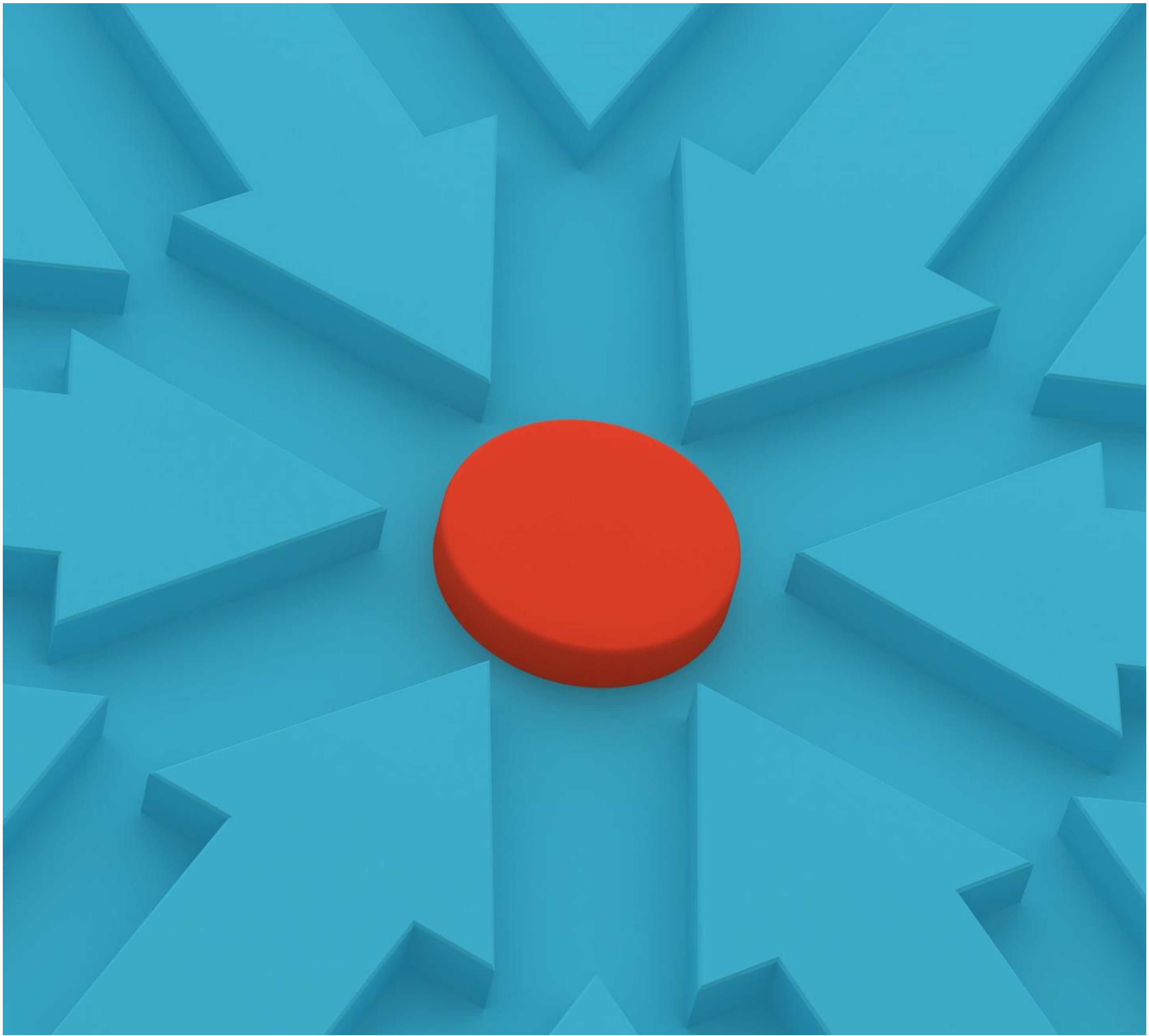

RECOMMENDING WEB ARTICLES

MAY 2022

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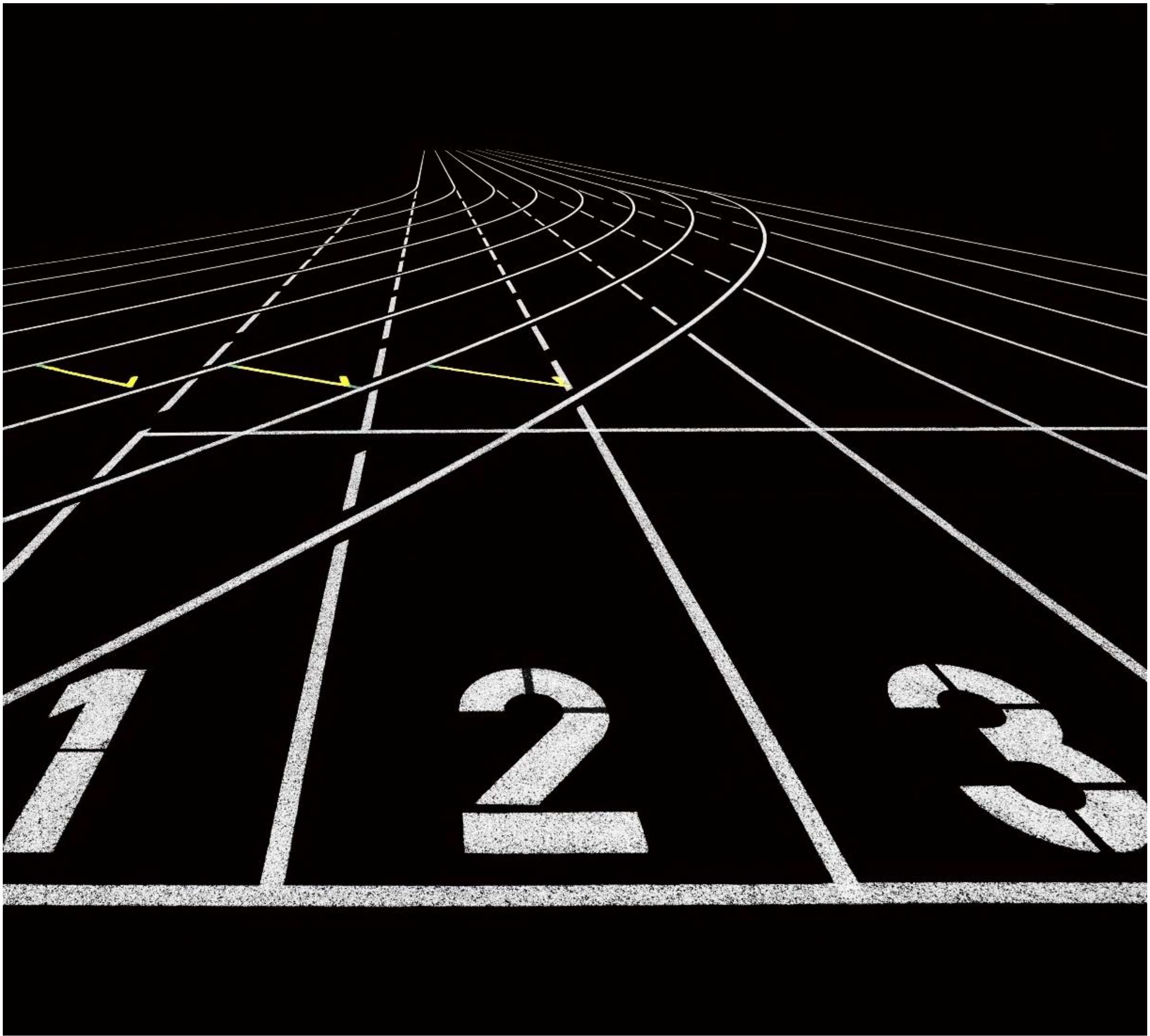

THOUGHT PROCESS

In order to extract features from the text we can use (Bag of Words, N_grams or TF-IDF). And to cluster our categories into subcategories, we can either use the title, or the article body. So, I examined combinations of the above.

I could reach a classifier accuracy of 85% using TF-IDF on the body, and using the XGBoost Classifier.

For the Subcategory Clusters, I got different results, but saved those created using BOW on the titles, as I believe titles are more intuitive and representative in clustering, and I think BOW works best with titles than the TF-IDF method.

DATA CLEANING

Step 1: Check for NaNs
Step 2: Check for Duplicates
Step 3: Check short Titles
Step 4: Text Preprocessing
Step 5: Save The Cleaned DataFrame

Step 1: Check for NaNs

49 empty strings in the body column → replaced with ‘missing’

Step 2: Check for Duplicates

- Dropped 20 duplicated rows
- Dropped rows where title is repeated and the page does not exist or missing
- Dropped the "Learn More" Title
- Decided to keep other body and title duplicated in order not to lose information

Step 4: Text Preprocessing

- We can add a clean_text column in the data, then use string methods
- or we can extract features, then drop the unwanted columns

Preprocessing :

- Convert all text to lower case
- Remove underscores
- Remove words which contains same character more than twice (e.g. aaaaaall)
- Remove Punctuations
- Remove Stop Words
- Remove Emojis
- Remove Non-ASCII Characters
- Remove all text starting with numbers
- Remove words with less than 3 characters

Note: I did not perform stemming for the cleaned text, and not sure if it is necessary.

EXTRACT FEATURES FROM TEXT

In order to extract features from the text we can use (Bag of Words, N_grams or TF-IDF).
I examined BOW and TF-IDF.

I think BOW works best with titles than TF-IDF and not sure if my intuition is right

- As titles has way less words (but more representative) than the body,
- And repeating the word in many titles should show its importance for the clustering,
- This shouldn’t be penalized and treated like “stop words” as in TF-IDF.

BUILD A SUPERVISED LEARNING MODEL

I could reach a classifier accuracy of 85% using TF-IDF on the body and using the XGBoost Classifier.

CLUSTERING

For the Subcategory Clusters, I got different results, but saved those created using BOW on the titles, as I believe titles are more intuitive and representative in clustering, and I think BOW works best with titles than the TF-IDF method.