

Breakthrough Capital LLC

Identifying Emerging Technology
Investment Targets

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01

Mission Statement: Stay ahead of the curve by identifying and investing in the most promising emerging technologies.

*Can we identify the the origin of Reddit posts **while** minimizing Type II errors so topics of interest (investment targets) are not missed?*



Reddit: A popular news and content **aggregation** site divided into communities (subreddits) by discussion topic.

Estimated ~55M daily users, projected to grow by 25% within 2 years



Target Subreddit



Subreddit 1: “Futurology”

A subreddit devoted to the field of Future(s) Studies and evidence-based speculation about the development of humanity, technology

- Titles and ideas aggregated may help identify areas for VC targets
- Popular links aggregated here may provide insight to other reliable news sources



02

Proposed Solution

Strategic planning project plan

ID



Identify technology
focused subreddit

Train



Train a model against subreddit
with some overlapping themes

Optimize

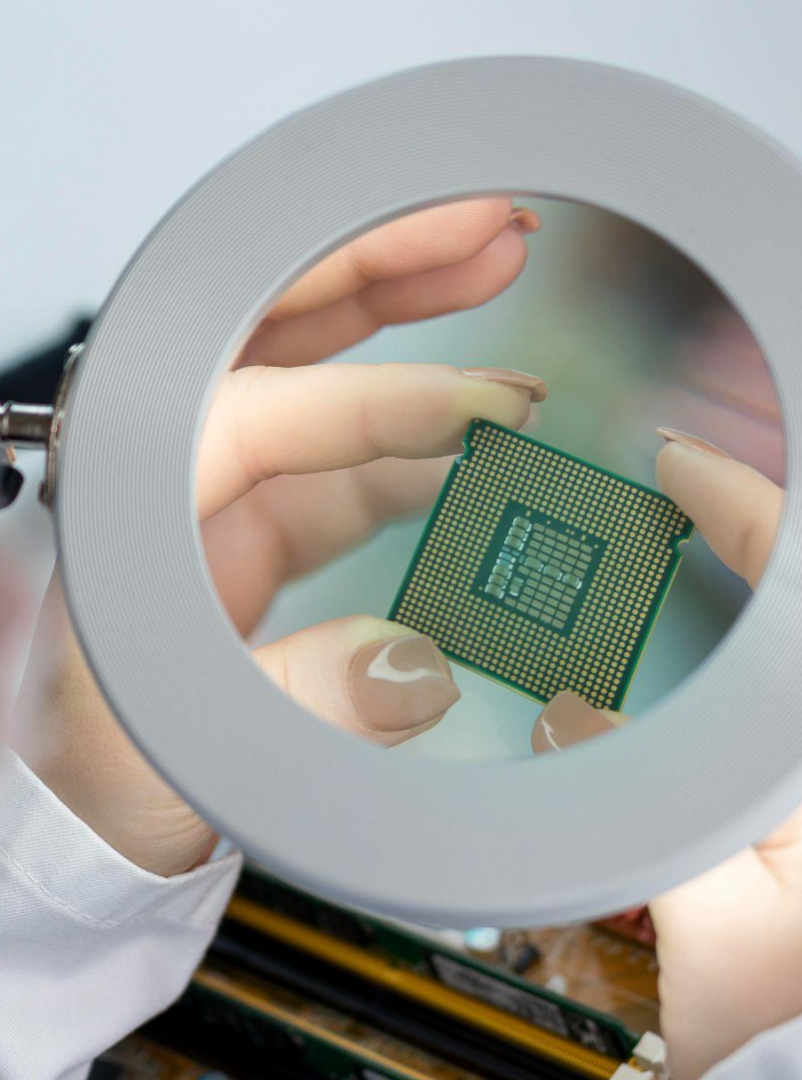


Minimize false
negatives (Type II)
errors

Extract



Extract popular
themes and
domains



03

Methodology

Subreddit 1: “Futurology”

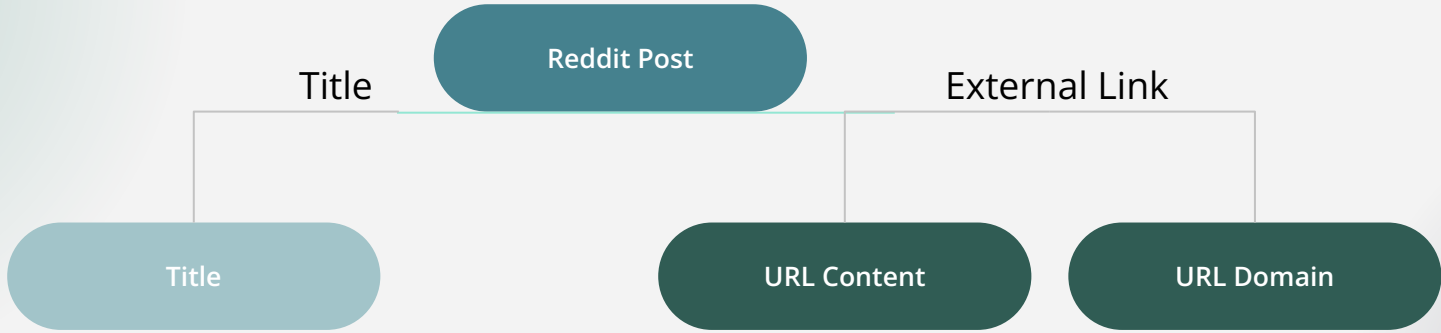
A subreddit devoted to the field of Future(s) Studies and evidence-based speculation about the development of humanity, technology

- 19M subscribers
- 1695 posts

Subreddit 2: “Scifi”

A subreddit centered around the Science Fiction or Speculative Fiction genre. “Laser guns, spaceships, and time travel”...

- 4.1M subscribers
- 1961 posts



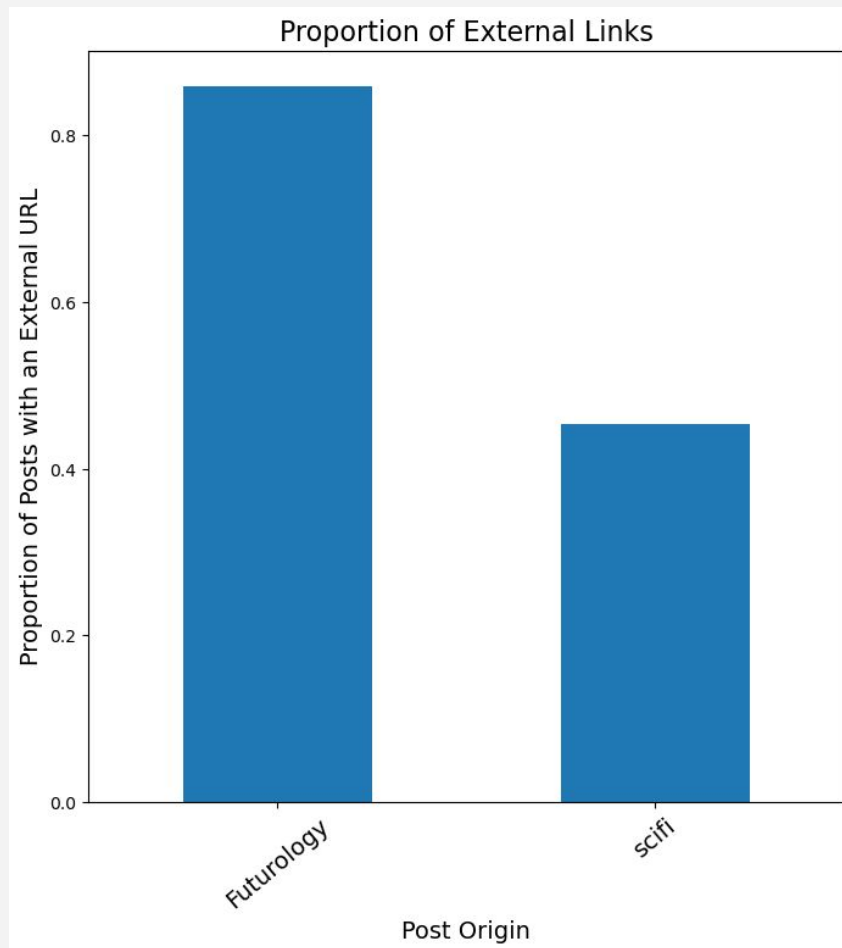
- Categorical
- Subject to NLP
 - WordNet Lemmatized
 - Vectorized

- Categorical
- Processed with custom URL tokenizer
- Subject to NLP
 - Vectorized

- Categorical
- Processed with domain extractor function
- OneHotEncoded

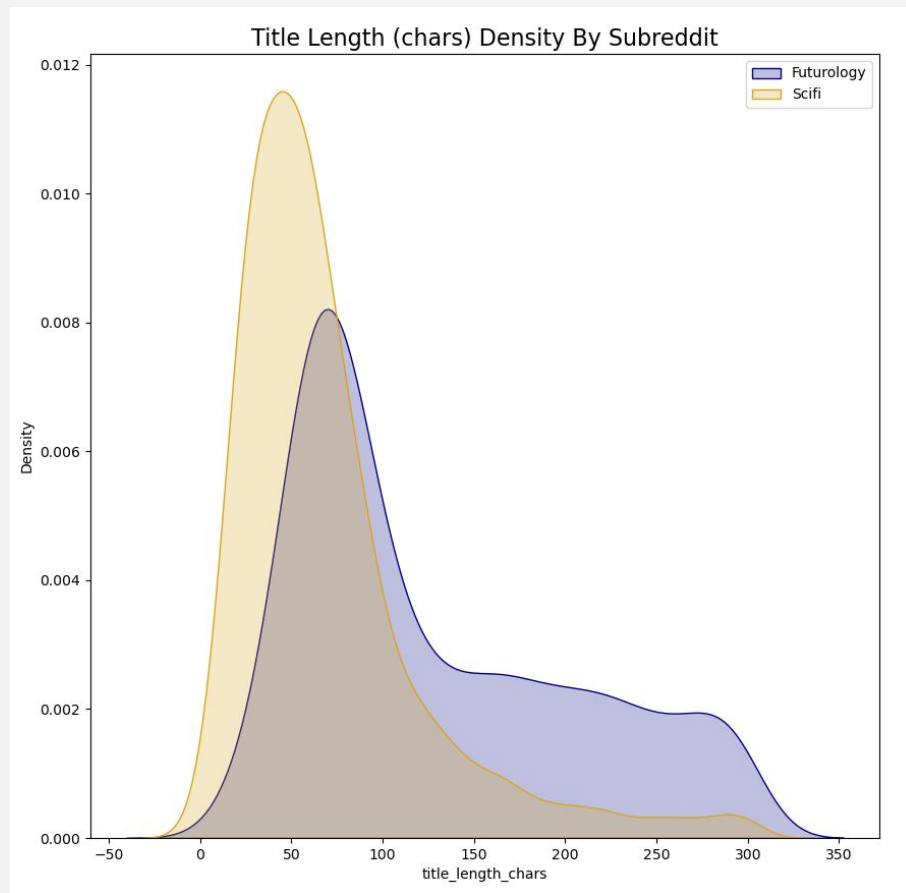
Why URLs? Why no self text?

- Both subreddits feature a large amount of posts leading to external sites
- For this project, domains reddit.com and i.redd.it were ignored
- External links mean no self text, so titles were used instead




Interesting Aside - Why No Meta Features on Title like length?

- Initial impression was that they'd help based on visualizations like this one
- Removing it proved to increase both train and test score

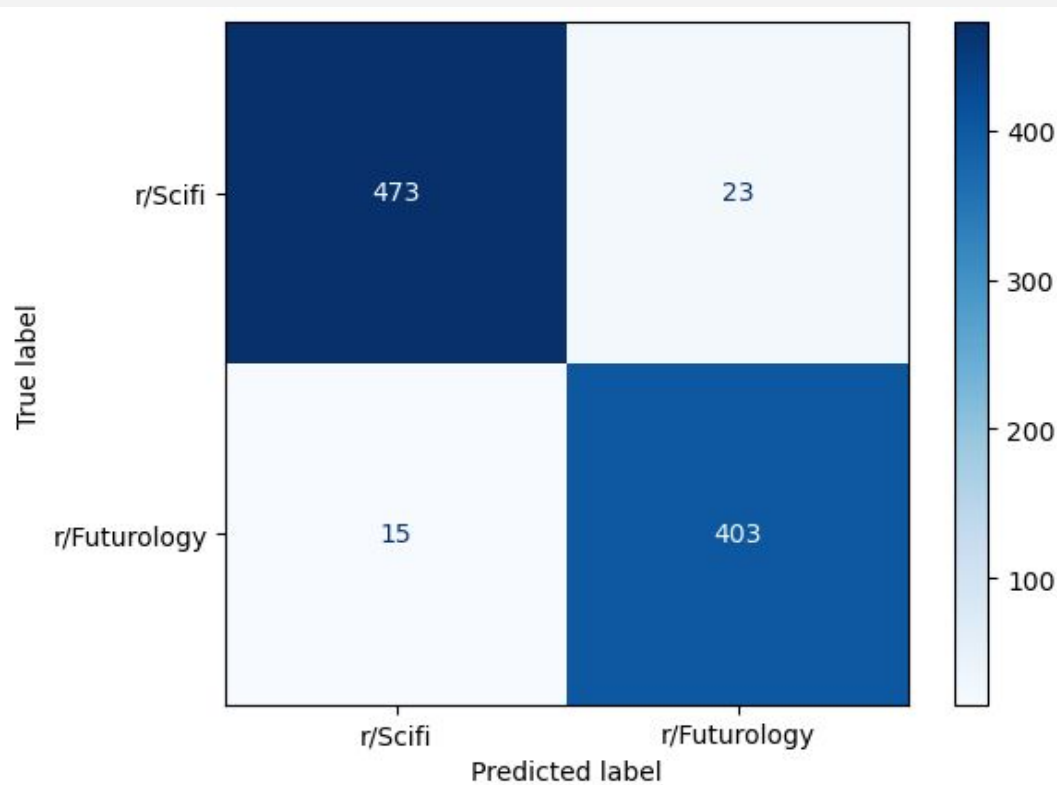


Model Analysis

Model	Transformers	Test Data Results
Naive Bayes	Count Vectorize (Title, URL content) One Hot Encode (URL domain)	Accuracy: 95.8% Recall: 96.4% All Data Accuracy: 98% All Data Recall: 96.5% 
Naive Bayes	TFIDF Vectorize (Title, URL content) One Hot Encode (URL domain)	Accuracy: 95.9% Recall: 95.9%
Random Forest	Count Vectorize (Title, URL content) One Hot Encode (URL domain)	Accuracy: 91.5% Recall: 88%
C Support Source Vector Classification	Count Vectorize (Title, URL content) One Hot Encode (URL domain)	Accuracy: 92.5% Recall: 88.9%

Record for most expensive: Model 2 - with 155,521 models elapsing 37m,
"Friends don't let friends GridSearch"

Confusion Matrix - Holdout Data



Optimized Type II Errors

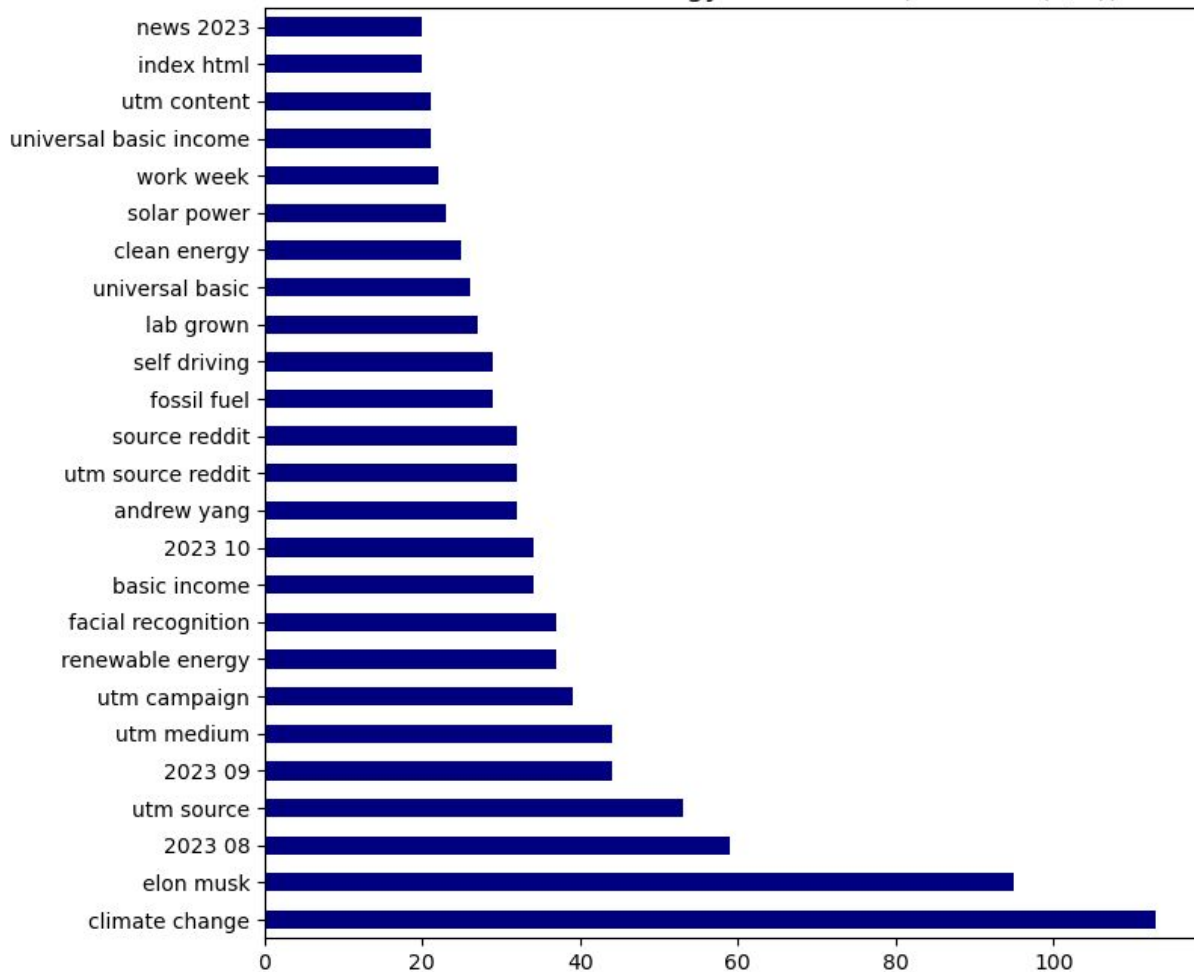
- Model had highest recall; least likely to misclassify a true Futurology post
- Investigating false positives is cheap, missing potential leads is not

04

Insights and Recommendations



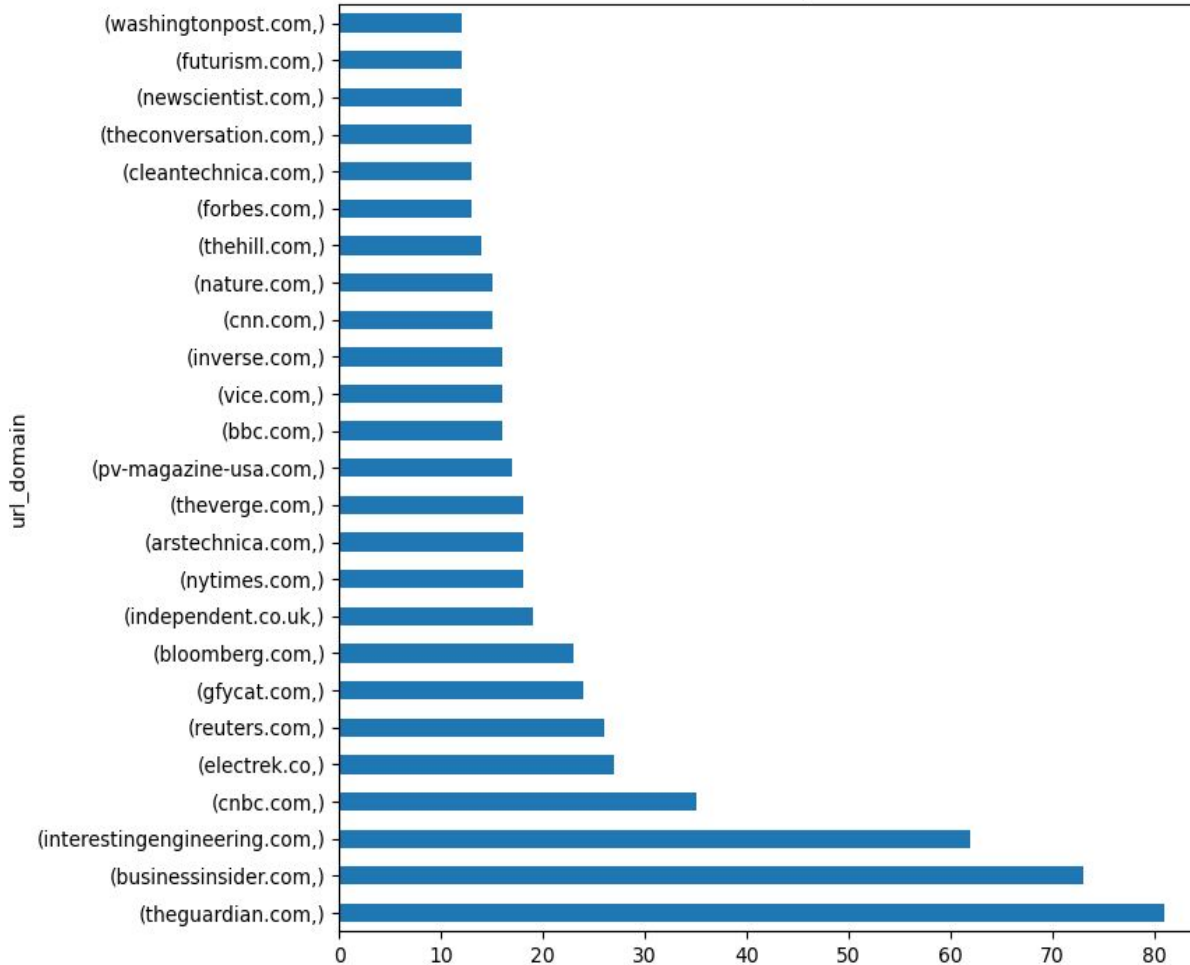
Most Common Futurology Title Terms (NGrams (2,4))



Invest in the future:

- Increase research into market growth and startup activity focused on areas like:
 - Climate change
 - Renewable energy
 - Facial recognition
 - Universal basic income effects
 - Self driving cars
 - Lab grown protein
 - etc

Most Common Externally Linked To Sources



Stay on the pulse:

- Increase monitoring of these websites for futurism articles gaining traction:
 - The Guardian
 - Business Insider
 - Interesting Engineering
 - Cnbc
 - Electrik
 - Reuters
 - Bloomberg
 - etc.

For your amusement - best of the false negatives (Predicted Futurology but were Scifi)

What technologies could potentially be invented in the near future?

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Scientists at Harvard and MIT have collaborated to discover an entirely new form of matter. They have created molecules from light - and the properties of these new photon-molecules are similar to that of a LIGHT SABER

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How to cause a global dark age?

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It's not aliens. It'll probably never be aliens. So stop. Please just stop.

