PROJECT 3

Web APIs & NLP

Problem Statement

Classification model can be useful for every company to classify sentimental analysis or categorical decisions. Illustrate how NLP differential two different subreddit accurately to non-technical audience such as <u>Subreddit moderators / content creator</u> so that they are able to move/post the contents to the correct subreddit.

<u>Package used:</u>
Web API - Pushshift
NLP - Logistic regression, Naive bayes and random forest classifier

Examples from both Subreddits

r/science

r/science · Posted by u/MistWeaver80 2 months ago 11 5

Two doses of an mRNA (Pfizer-BioNTech or Moderna) vaccine or one dose of viral vector (Johnson & Johnson) COVID-19 vaccine was insufficient to produce adequate immunity to a lab-created Omicron variant, but a booster dose of an mRNA COVID-19 vaccine provided the best immune protection.

medicalnewstoday.com/articl...

Medicine

r/wallstreetbets

r/wallstreetbets · Posted by u/romjpn 2 months ago

Moderna is probably the most vulnerable COVID vaccine company right now and why an aggressive short might make sense.

Discussion

Moderna is the example of a small company that has its entire wealth built around one thing: mRNA COVID vaccines. Before COVID, this company was on the brink of bankruptcy. As COVID vaccines reveal themselves to be much less efficacious that initially marketed and as Moderna vaccines are said to induce pretty severe side effects notably (see recommendations against it for young males in Europe), I see a potential aggressive short in this stock for 2022. They have a great ally though, and it's one of their patent holder: Anthony Fauci. But Fauci might become a handicap in the future for his potential role into gain of function research in China, his lies to Congress and his conflict of interests that absolutely no one can ignore. His fall into total disgrace might just be a matter of time (hopefully) and might drag Moderna with it. I could see the CEO progressively trying to exit. The dominoes might fall very quickly if it happens. On the other side, the risk to the upside still exist. Moderna might manage to push other types of vaccines (cancer? other illnesses?) after its success in the COVID vaccines industry. Fauci might also manage to drag his possible prosecutions and remember, he has powerful allies himself. Pfizer is another element to take into account. Moderna's main rival has a potential safe exit: their treatment named Paxlovid. Once Paxlovid is confirmed to be able to flood the world with a high price tag, Pfizer might not see the current vaccine propaganda to be as useful. Another threat to Moderna is the actual development of a variant resistant vaccine. An example: https://www.defenseone.com/technology/2021/12/us-army-creates-single-vaccine-effective-against-all-covid-sars-variants/360089/

EDIT: I'll rest my case on the arguing and let the movement of the market to do the talking. Good luck to everyone and happy new year!

Update: FXstreet article more or less mirroring my opinion (in a more politically correct manner) https://www.fxstreet.com/news/moderna-inc-mrna-stock-price-and-forecast-moderna-works-on-omicron-booster-202201111158

> The big question surrounding investment in this one is how to replace the massive revenue stream that is covid vaccination. We are assuming this covid winter is the last one. Perhaps vaccinations will be needed next year, but it is highly unlikely to be anywhere near the extent of the current take-up globally.

Update 22/01/2022: https://www.forbes.com/sites/jonathanponciano/2022/01/21/moderna-stock-crash-intensifies-losses-top-130-billion-after-scientists-find-covid-boosters-arent-halting-omicron-infections/

"Both subreddits have contemporary relevance"

Examples from both Subreddits

r/science · Posted by u/HeinieKaboobler 1 year ago

Google searches to buy chloroquine spiked by 442% following Donald Trump and Elon Musk's endorsements of the drug for treating COVID-19

psypost.org/2020/0...

r/wallstreetbets · Posted by u/readerseven 1 year ago

Short-Sellers Profit Billions; Tesla Stocks Surge 20% And Elon Musk Gains Over $22B

forbesmiddleeast.com/money/...

News

r/science · Posted by u/Wagamaga 2 years ago

Surge in people trying to buy unproven coronavirus 'cures' promoted by Trump and Elon Musk. Searches for purchasing chloroquine were 442% higher and searches for hydroxychloroquine were 1,389% higher following their public endorsements.
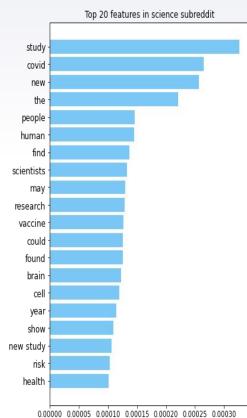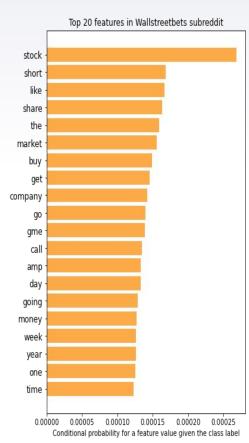
independent.co.uk/life-s...

Psychology

"Prominent character appeared in both subreddit"

How it works

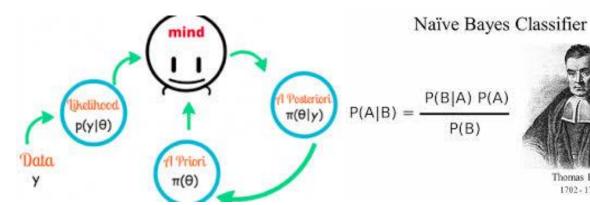"TF-IDF Vectorizer enables modeling to come out with algorithm"

Predictions from modeling

<u>Naive Bayes Classifier</u>

```
1  predict_subreddit("Russian Mafia in Shambles as Adidas closes Stores in Russia")
```

('wallstreetbets', '57.6%')

```
1  predict_subreddit("Russia warns the West: our sanctions will hurt you - Are Palladium and Nickel Sanctions incoming?")
```

('wallstreetbets', '53.9%')

```
1  edict_subreddit("[#33|+12338|323] Shackleton's Endurance finally found after 106 years under the Weddell Sea in Antarctica")
```

('science', '91.46%')

Model Accuracy: 98.51%
Specificity :   97.87%
Sensitivity: 98.94%

Naïve Bayes Classifier

mind

Likelihood
$p(y|\theta)$

A Posteriori
$\pi(\theta|y)$

A Priori
$\pi(\theta)$

Data
y

$$P(A|B) = \frac{P(B|A)\ P(A)}{P(B)}$$

Thomas Bayes
1702 - 1761

Thank You!

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