

# Natural Language Processing (NLP) Machine Learning:

Dungeons and Dragons and  
Call of Duty

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# Call of Duty



- **Low fantasy** - military combat gear
- **Solo play** is the norm
- Co-op play is unusual
- Player vs Player is an option
- **Console** play (XBOX + ...)

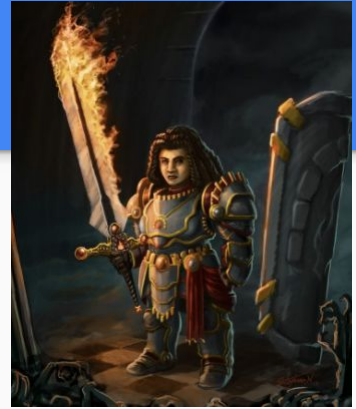
# Dungeons and Dragons

# Call of Duty



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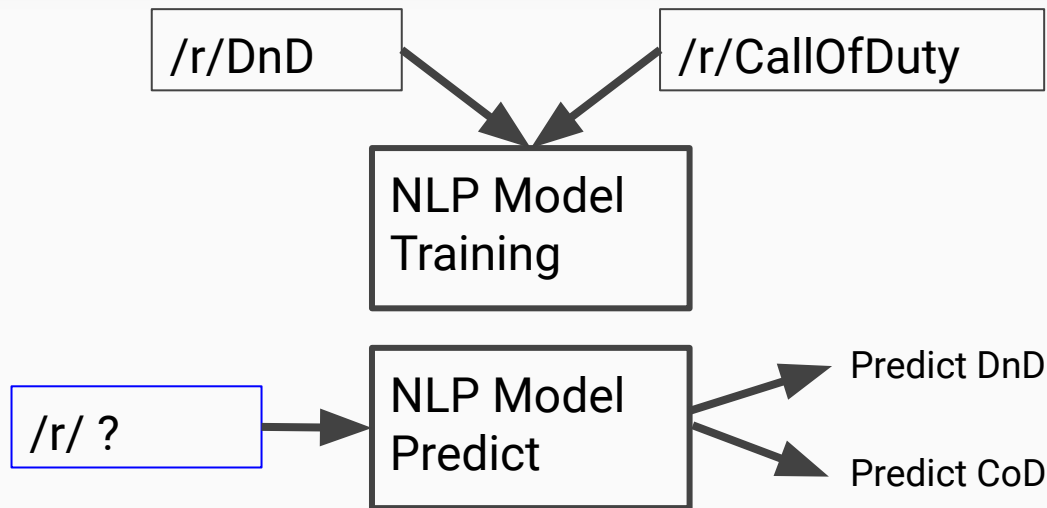
# Dungeons and Dragons



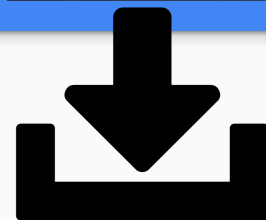
- **High fantasy** - dragons, magic
- Solo play is unusual
- **Co-op play** is the norm
- Player vs Player is discouraged
- **Table top** (in person + online ...)

# Question: What differentiates the player communities for CoD and DnD?

1. Using posts from reddit
2. Build a model that can predict
3. Explore the pieces that have predictive power



What might those predictors say about the communities?



# Gathering posts from reddit

Using the Pushshift API:

- Programmatically downloaded 500 posts per request
- 8 times
- = 4000 posts from each subreddit

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DnD:	9 days of posts	5/20/2020 - 5/28/2020
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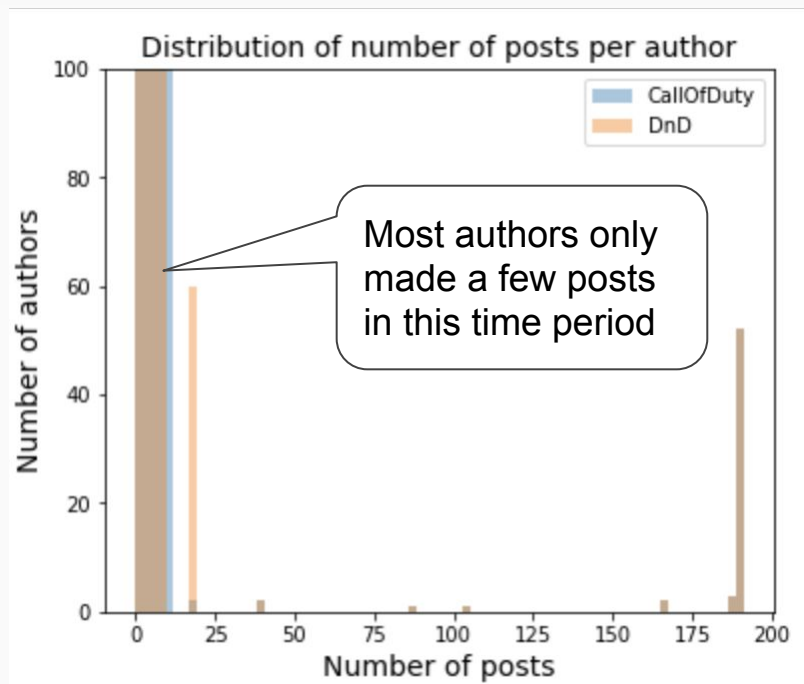
CallOfDuty:	17 (8d more)	5/12/2020 - 5/28/2020
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# Exploring posts from reddit

Removed 33 banned posts and 166 duplicates

8000 posts → 7801 posts

- 5441 unique authors
- 2 authors who post in both subreddits
- On average:
  - DnD: 1.39 posts per author
  - CallOfDuty: 1.48 posts per author
- Posts: 49.8% CoD, 50.2% DnD



# NLP Models

Set aside 25% of the data to test the model

Prepared the text

- Discarded non-predictive words (a, the, of)
- Kept 1, 2, and 3 word phrases

Built 4+ models using the other 75% of the data

- Accuracy of predictions
- Repeatable accuracy on new data

can we please ban this cheater were  
is the best place for me to post to get  
him **banned** thanks

what s going on in your **campaign**

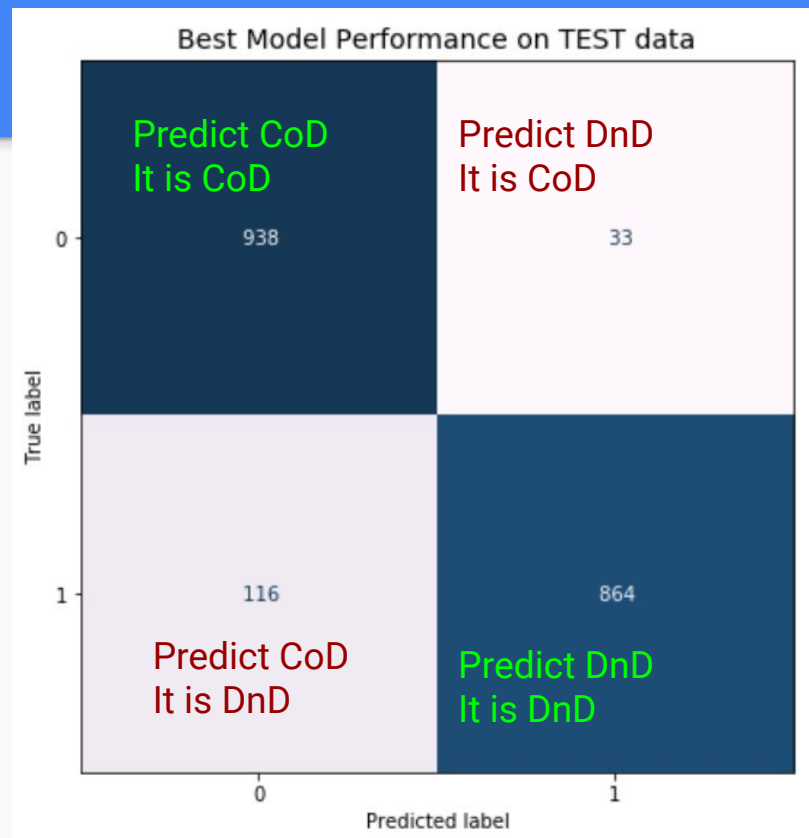
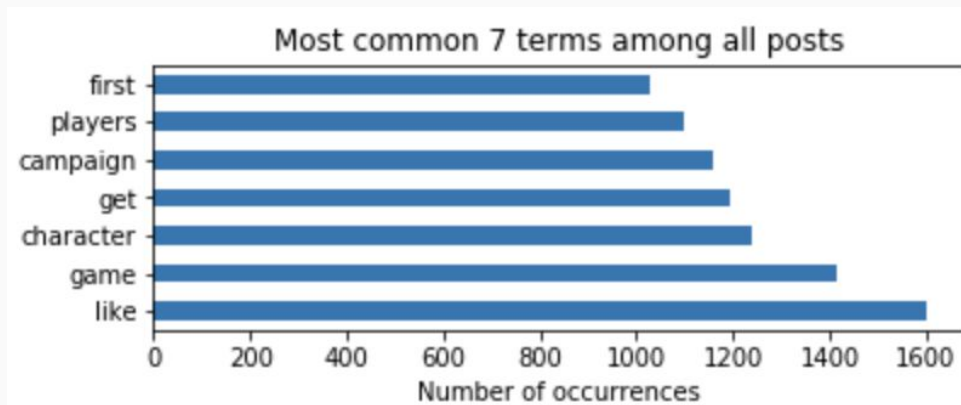
comment if you don t see your **favorite**  
**gun** this is just what I normally hear

# Evaluation:

Baseline of 50% if we guessed 'DnD' every time

Models predict correctly on 92% of posts

(93% if allowed to use terms)



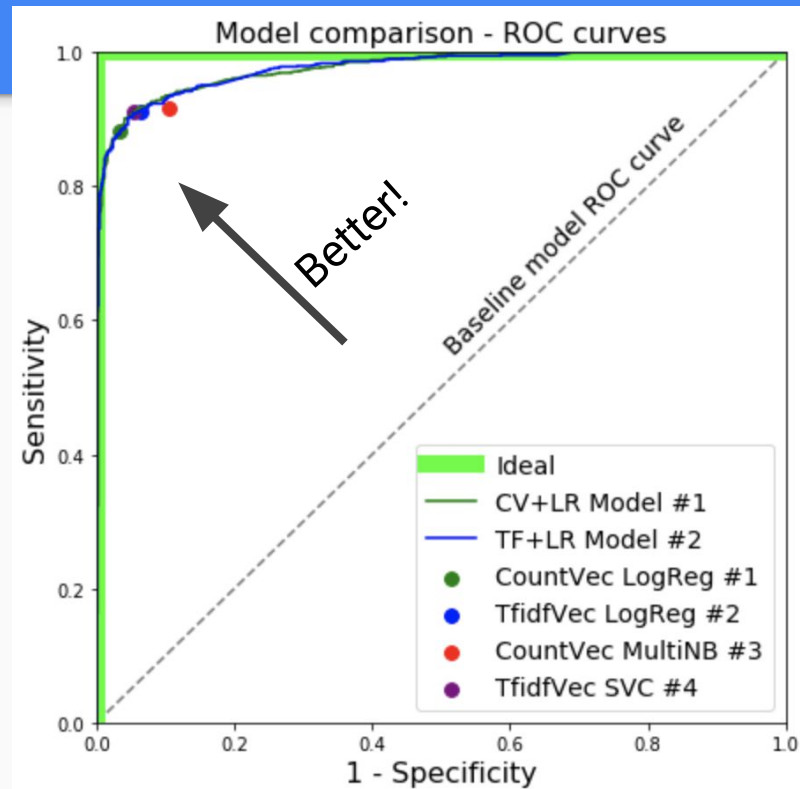


# Conclusion: NLP model can differentiate

NLP (Natural Language Processing) model can correctly predict whether a post is from a CoD or DnD subreddit

- 93% accuracy when including game names (e.g. dnd, 5e, mw, mw2)
- **92% accuracy otherwise**

What might those predictors say about the communities?





# Call of Duty

Top Predictors:

# Dungeons and Dragons





# Call of Duty

Top Predictors:

- warzone
- multiplayer
- **remastered**
- lobby
- ww2 / wwii / waw
- mission
- **opinion**
- mobile
- zombies

# Dungeons and Dragons

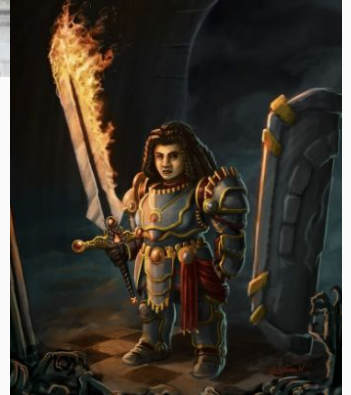
- oc (original character)
- **art**
- dm
- dice
- bard
- character
- **homebrew**
- monster
- druid



Thank you



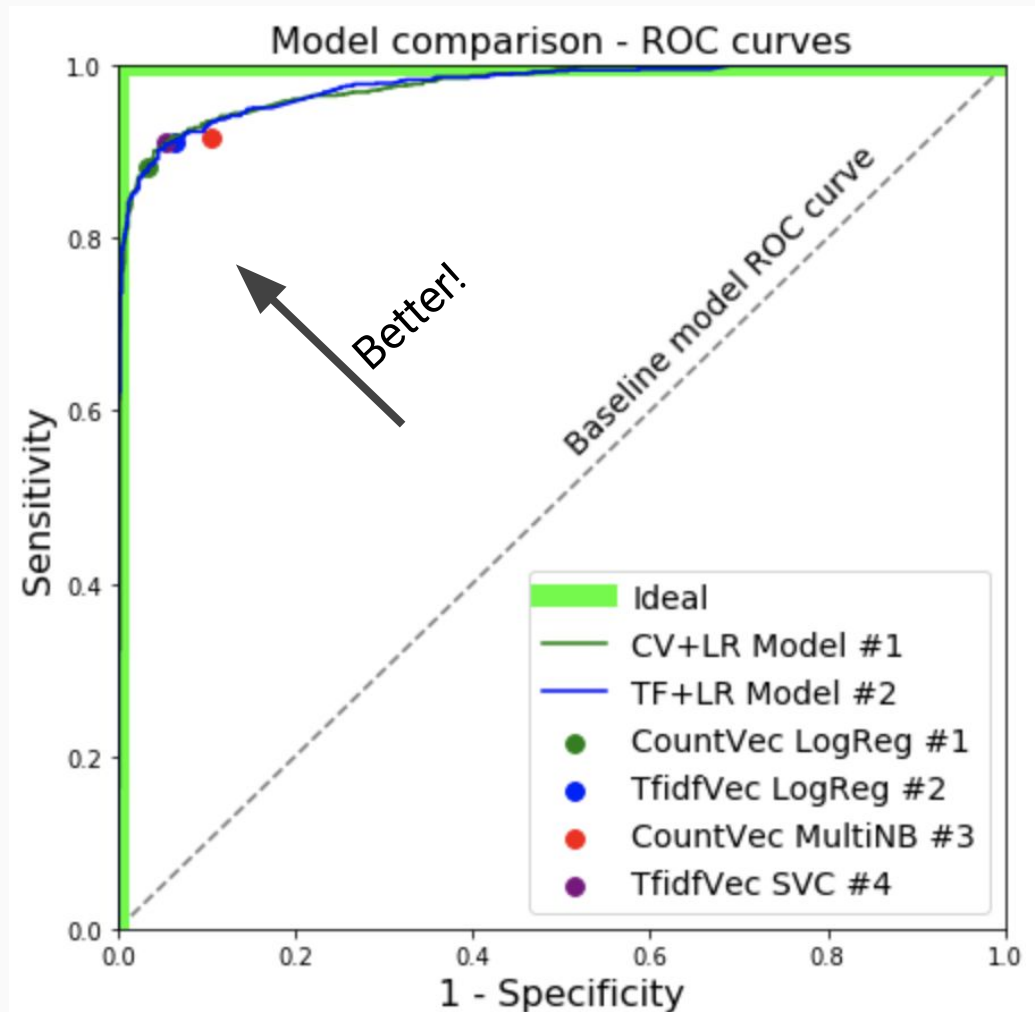
Questions?



# Addendum

## 4 Models:

1. CountVectorizer + LogisticRegression
2. TfidfVectorizer + LogisticRegression
3. CountVectorizer + MultinomialNB
4. TfidfVectorizer +  
SupportVectorMachine



# Photo Sources

<https://i.ytimg.com/vi/cq5MxnMEiu4/maxresdefault.jpg>

<https://computerbackgroundimages.com/wp-content/uploads/2018/09/Call-of-Duty-Black-Ops-4-Zombies.jpg>

<https://i.ytimg.com/vi/M05J-5akzaE/maxresdefault.jpg>

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[https://basementscientist.files.wordpress.com/2014/04/dungeons\\_and\\_dragons\\_game1.jpg](https://basementscientist.files.wordpress.com/2014/04/dungeons_and_dragons_game1.jpg)

[https://www.ddo.com/sites/default/files/styles/gallery\\_thumbnail/public/gallery\\_images/DDO%20Q3%202013%2016-9%20C.jpg?itok=hQjSMI5K](https://www.ddo.com/sites/default/files/styles/gallery_thumbnail/public/gallery_images/DDO%20Q3%202013%2016-9%20C.jpg?itok=hQjSMI5K)

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