Understanding Neurodiverse Language

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Studying subreddit posts to better understand differences in language used between ADHD & Autism

The Problem

- Roughly 50-70% of people on ASD share <u>comorbidity</u> with ADHD

- Key differences, but **<u>several</u>** similarities

- Clinical Psych. Tech Startup wants to understand the differences in language used by people with one or both disorders
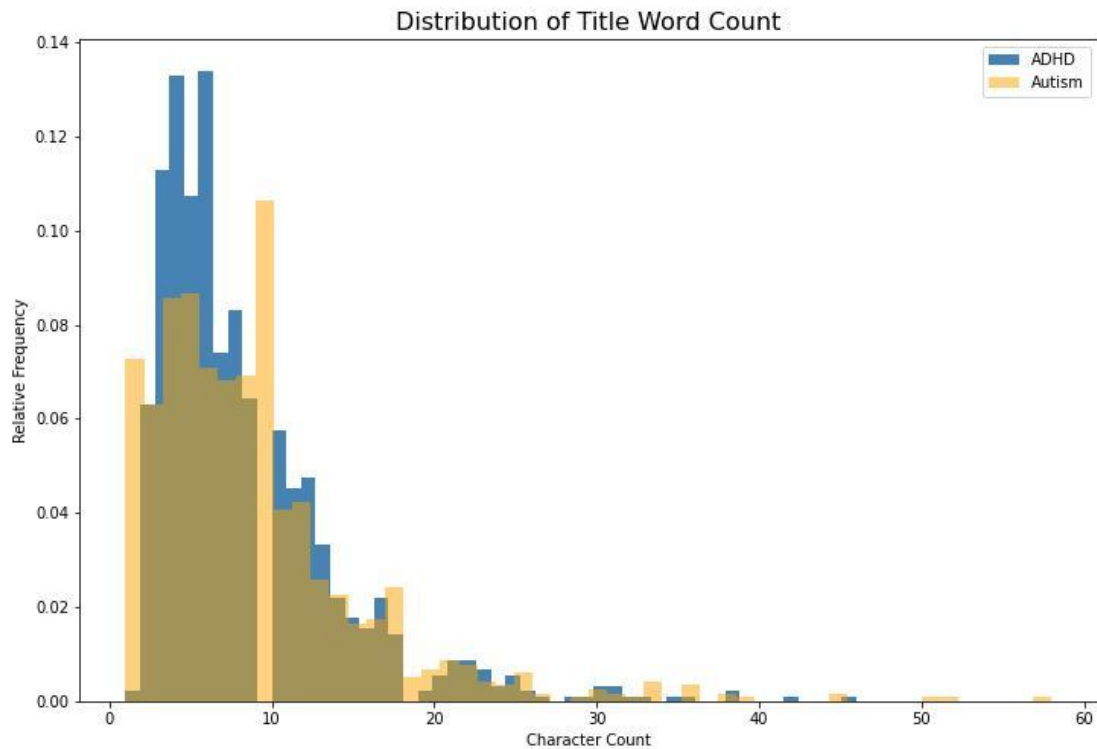
- Where do we start?

Enter Prem (and Reddit)

- Examining 1000 most recent posts from r/ADHD & r/autism

- Are there keywords or phrases that posters these subreddits use more or less?

- <u>Hypothesis</u>:
    - r/ADHD: more discussion about medications, or synonymous with focus, attention
    - r/autism: more discussion about daily life, social experiences

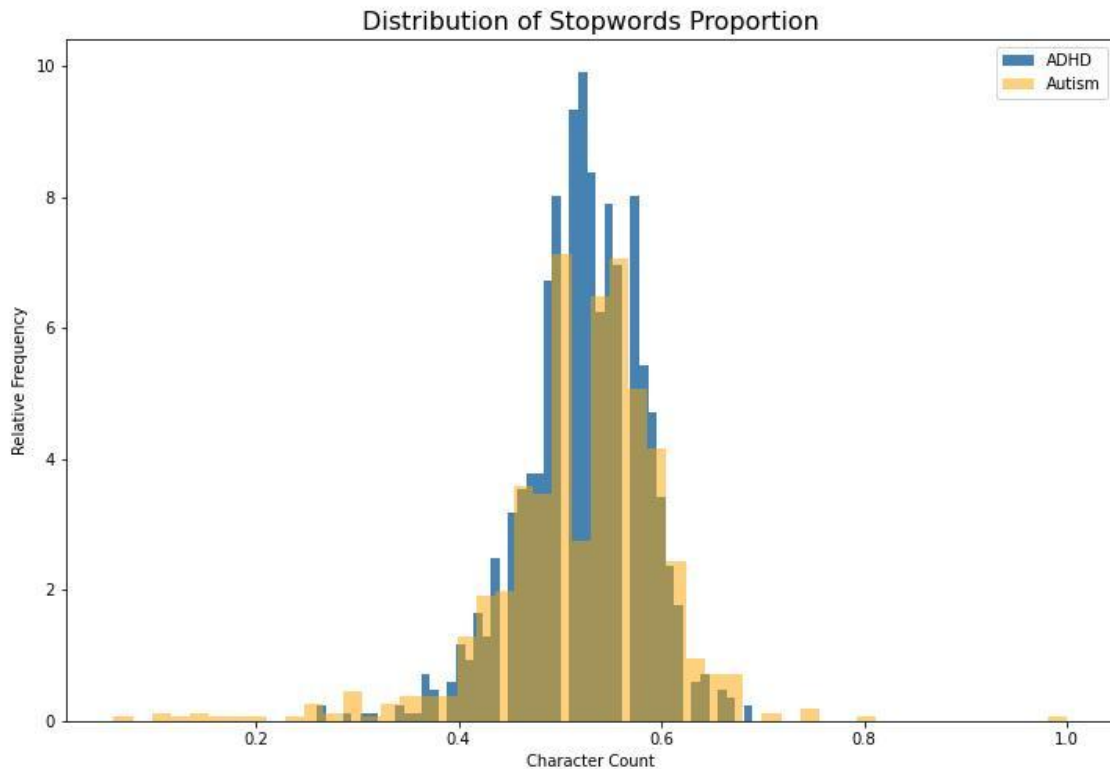- But are there quantifiable traits of the 2 subreddits we can differentiate?

Examining Posts - Word Count

Distribution of Post Word Count
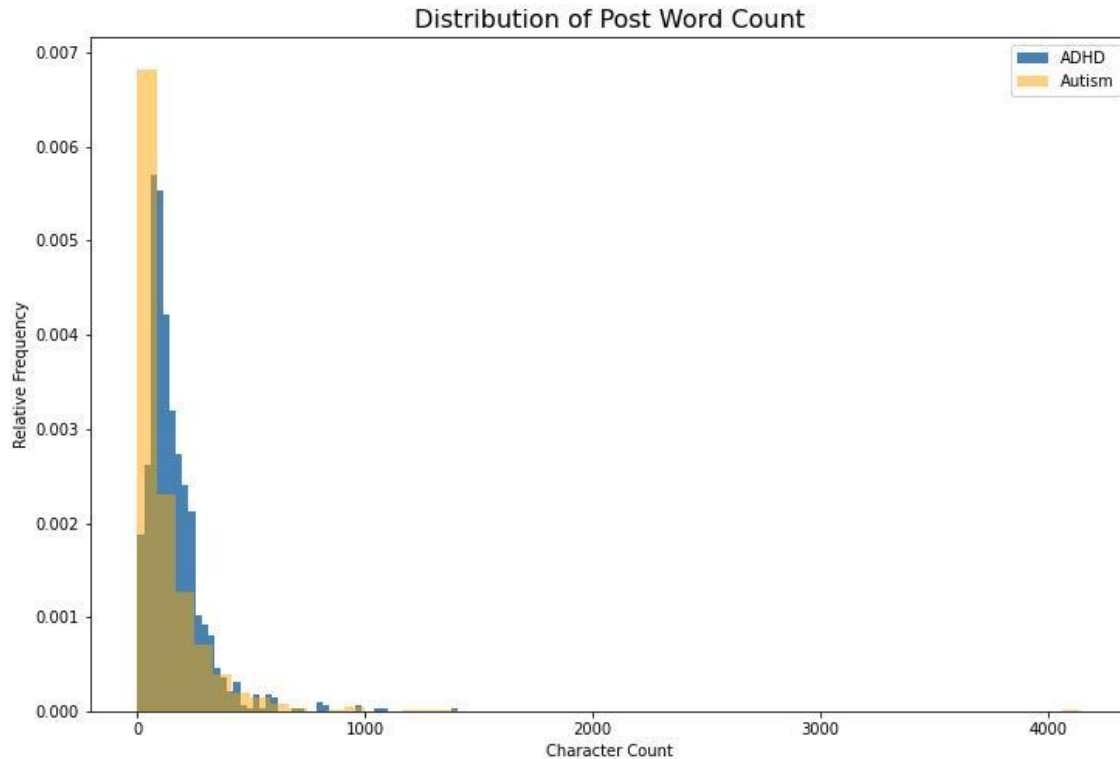
Examining Title - Word Count ... a similar story

Maybe folks with ADHD tend to be more wordy?

Distribution of Stopwords Proportion

Legend: ADHD, Autism

Y-axis: Relative Frequency
X-axis: Character Count

So far, no substantial differences, so let's look at differences in word frequency
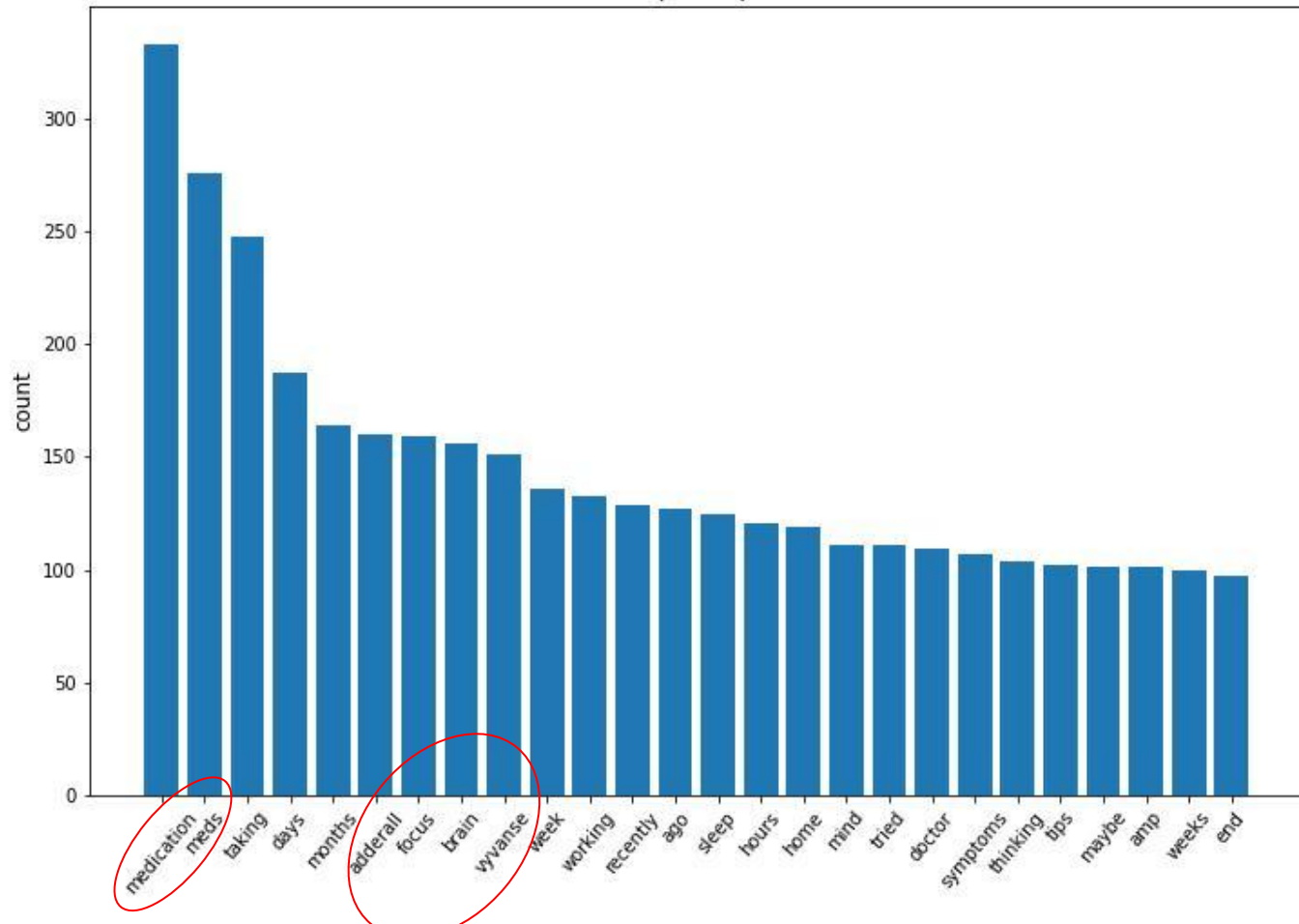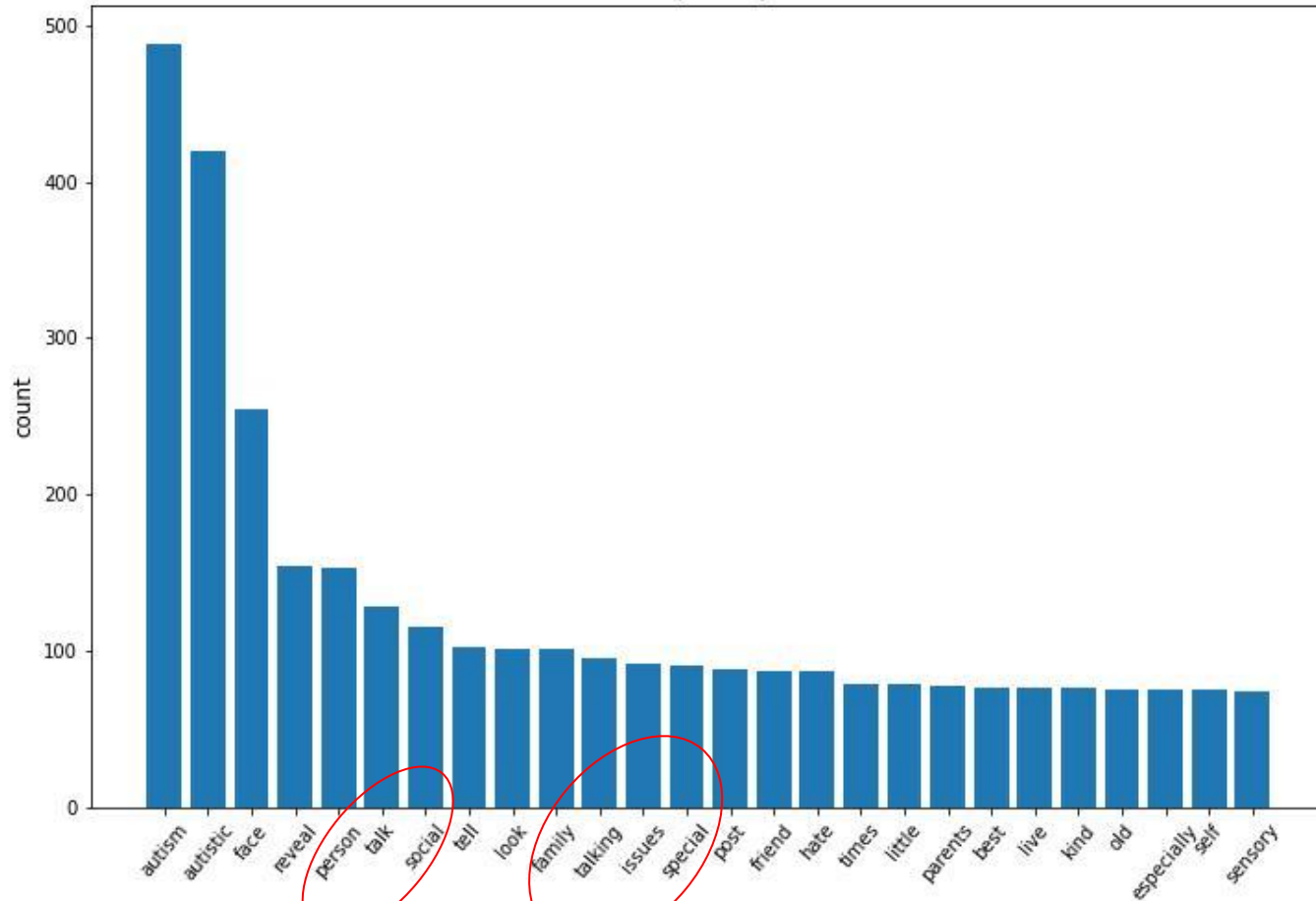
r/ADHD Top Unique Words
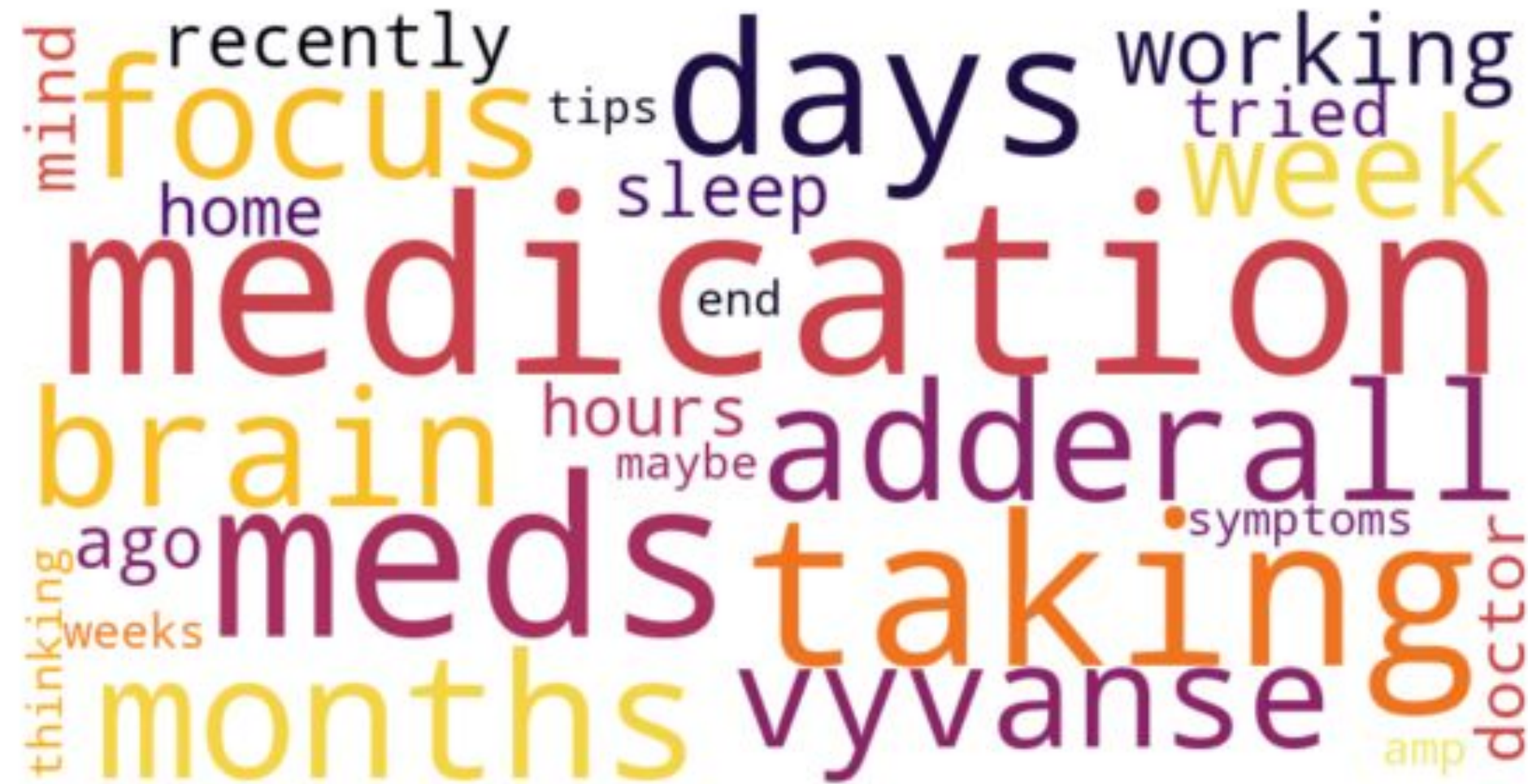
r/autism Top Unique Words
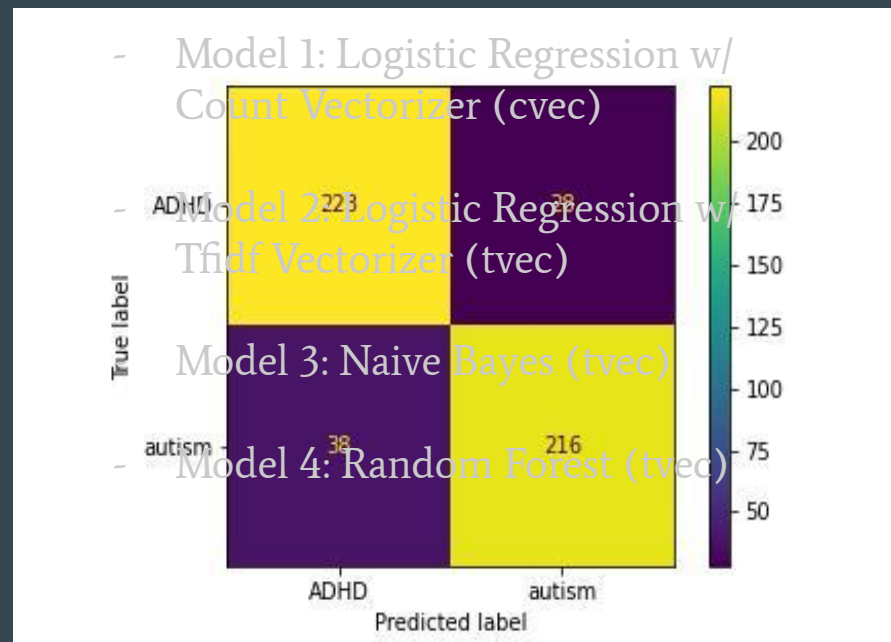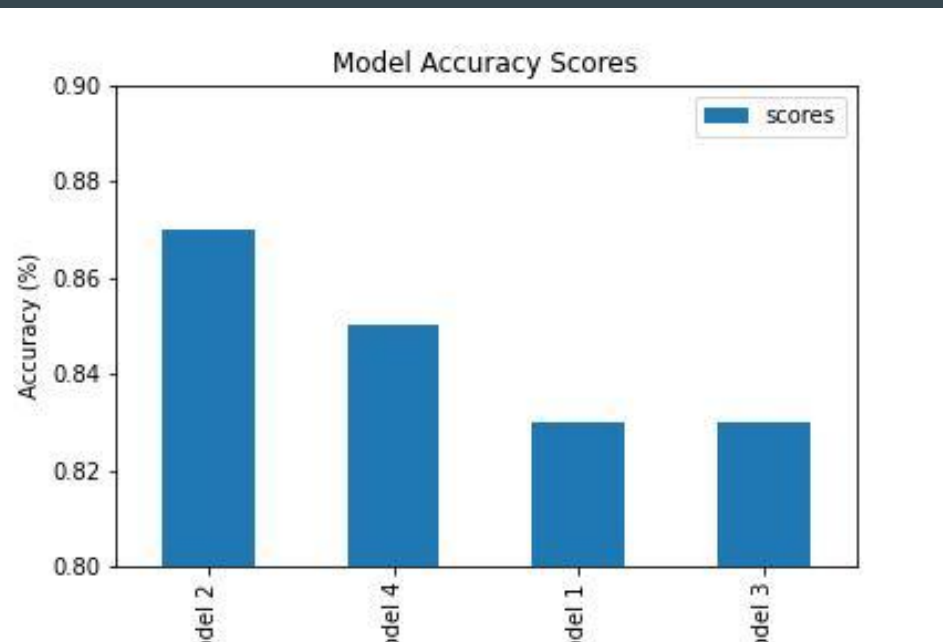
r/ADHD Top Unique Words

r/autism Top Unique Words

Frequency of words helps with word importance in classification.

Modeling & Evaluation

- Model 1: Logistic Regression w/ Count Vectorizer (cvec)

- Model 2: Logistic Regression w/ Tfidf Vectorizer (tvec)

- Model 3: Naive Bayes (tvec)

- Model 4: Random Forest (tvec)

Recommendation

- Clear difference between words used

- Relative frequency and importance is extremely valuable

- Online forums may be a great place to study more in depth what types of language people with certain disorders rely on more for communication

Potential Changes for the Future

- Looking at more metrics from Reddit

  - Number of comments

  - Language used in the comments

  - Awards given

- Anything that might indicate high or low participation in the community