Rude-Mood

An analysis of Computational Politeness in the Reddit community

> *Link to Github Repo: victorknox/rude-mood: An analysis on Computational Politeness (github.com)*
>
> *Link to the main notebook with results: rude-mood/Rude_Mood.ipynb at main · victorknox/rude-mood (github.com)*

Overview

Politeness plays a very important role in social life, thus it also becomes an important part of language itself. It also plays an important part in Natural Language understanding for this reason. We plan on using computational approaches to identify and measure politeness in modern day social communities over the internet.

We chose the Reddit community for this due it its unique design involving **Subreddits** which allow the development of closely-knit communities of like-minded people. Another interesting feature of Reddit is **Karma**, which is supposed to be 'fake internet points'. Karma is a reflection of how much a contributor means to the community, and having more karma implies that you are more popular and important to the community.

Goals

The project aims to Detect and Analyze Politeness in modern day social media communities, We then use this method to analyze how Social factors like reputation and power(corresponding to Karma on Reddit) are related to Politeness. We also aim to see how Politeness relates to group identity by analyzing politeness in Subreddits.

Problems being solved

- The project allows us to refine existing Politeness classifiers to work on present day Social Media text which helps in Natural Language Processing.
- The analysis on ***relation between social factors and politeness*** helps in refining Sociolinguistic theories of politeness. We specifically aim to answer the questions
    - Does being polite pay off by contributing to Social status(reputation/power)?
    - How does politeness relate to social status?
    - How is politeness related to group identity? do the social norms of each community influence it?

Literature Review

Major reference: A computational approach to politeness with application to social factors

This will be our major reference as it refers to one of the first approaches to computational politeness strategies. The paper introduces a computational approach for politeness, and provides a tool to detect politeness, it then proceeds to analyze data from Wikipedia and Stackoverflow to know the relations between politeness and social factors, we will be trying a similar approach but for Reddit, which is modern and contains a different kind of data, and a similar feature to measure social status.

Evaluating a Computational Approach to Labeling Politeness: Challenges for the Application of Machine Classification to Social Computing Data

The paper talks about machine based politeness classification. It focuses on a particular politeness classifier and questions its utility by using it on specific data. Which is very similar to a part of our project. It also talks about few challenges faced in automated labeling of social media text.

The politeness package: Detecting politeness in natural language)

The paper talks about a package which contains tools to evaluate politeness from text. It also talks about 2 applications of detecting politeness in social interactions and speed dating. we may use this package in our project, which is where it would assist us.

Dataset

Requests involve an imposition on the addressee, making them a natural domain for studying the inter-connections between linguistic aspects of politeness and social variables.

We base our analysis on two subreddits where requests have an important role: r/Windows and r/Linux. Both subreddits dedicated to operating systems. Both communities are not only rich in user-to-user requests, but these requests are also part of consequential conversations, not empty social banter; they solicit specific information or concrete actions, and they expect a response

Data Collection Strategies

Since we are collecting Data from Reddit, we have decided to use the **Pushshift API**(using psaw which is a wrapper) and **praw**(python reddit api wrapper) .

We do this by searching for posts requesting for help in the subreddits named "r/windows" and "r/linux". After getting the url for each post, we push it to a function which returns all the comments of that post. We further use PRAW to find the karma of each author in the comments for further analysis.

Exploratory Data Analysis

Using the mentioned Strategies, we obtain Posts requesting for help in the subreddits mentioned (Windows and Linux). The subreddits were chosen due to the abundance of *requests* by people and answers from others in the communities, this data helps us analyze politeness better.

We have extracted about 100 posts from both the communities, along with all of their comments. The data we extracted is as follows:

Subreddit	Number of Posts	Number of Comments
r/Windows	99	1983
r/Linux	98	8177

For each comment, we have extracted the following data shown in the example:

title	body	votes	subreddit name	author	politeness score
If you want to run the Windows 11 build natively..	If you're on AMD turn on FTPM in the bios on your custom pc and should then install.	7	windows	Donkerz85	1

Methodology

Phase-1: Efficiency of the Politeness Classifier

Do existing politeness classifiers work efficiently on social media platforms such as reddit?

- Annotation of data from Reddit and running the classifier chosen and calculating its efficiency.
- If it is not very efficient, we train the classifier with more annotated Reddit data to make it efficient and acceptable for the study.

Phase-2: Politeness and Group Identity

How does Group Identity relate to politeness?

- Analysis of Politeness levels in different Subreddits to see how group identity relates with politeness.

Phase-3: Politeness and Social Status

How does Karma(Social Status) relate to politeness?

- Analysis of Karma vs Politeness for various authors with various Karma levels.

Observations

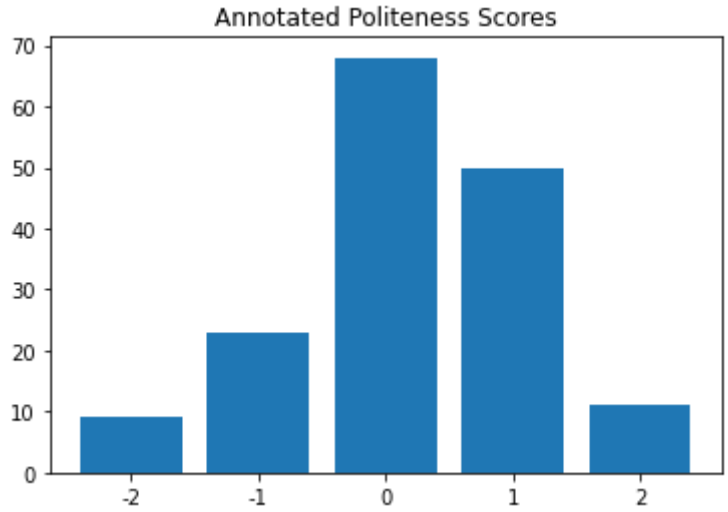
Phase-1: Efficiency of the Politeness Classifier

Do existing politeness classifiers work efficiently on social media platforms such as reddit?

Annotation

To answer this, we have annotated a portion of our dataset to check how efficient the politeness classifier is. In each annotation, we have marked the text according to its politeness level. We have given politeness scores for each comment, where the score ranges from -2 to +2. A politeness score of -2 indicates that it is very impolite, whereas +2 indicates that it is very polite. 169 comments were annotated out of 1983 Windows comments extracted.

The annotated data summary is shown in the graph below:



We see that the mode of this data is 0 and the average is between 0 and 1, meaning there are more politeness comments than the impolite ones.

Calculating the Efficiency

To test the efficiency of the classifier, we checked the accuracy of the classifier with respect to the annotated data. Out of **169** annotated comments, **141** of them matched with the classifier, leaving us with an accuracy of **0.83431952662**.

Summary of the efficiency test:

Subreddit	Total	Annotated	Matched with Classifier	Accuracy
r/Windows	1983	169	141	83.4%

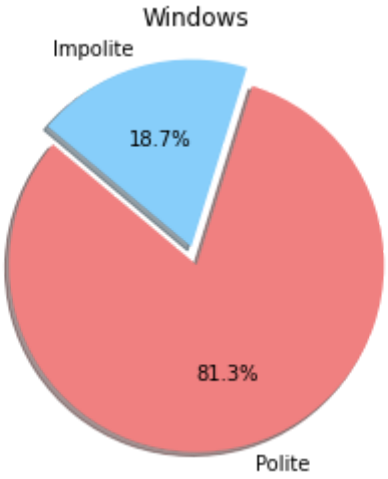
We have achieved an accuracy of 83.4%, which is almost the same as the accuracies provided with the initial datasets when the classifier was prepared. This is an acceptable accuracy rate for our analysis, so we do not need to train the classifier with reddit data, as it might cause in overfitting. Hence, We proceed with this politeness classifier for the rest of our analysis.

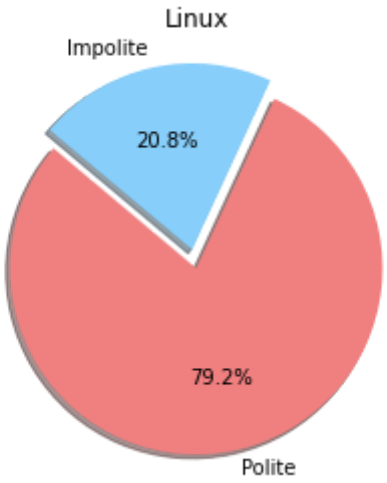
Phase-2: Politeness and Group Identity

How does Group Identity relate to politeness?

To analyze this, we have decided to look at the politeness levels in both Windows and Linux. This is because both of the subreddits are similar with respect to theme and are like two sides of a coin. We counted the percentage of polite comments in both the subreddits.

The results are as follows:





Summary of the results are as follows:

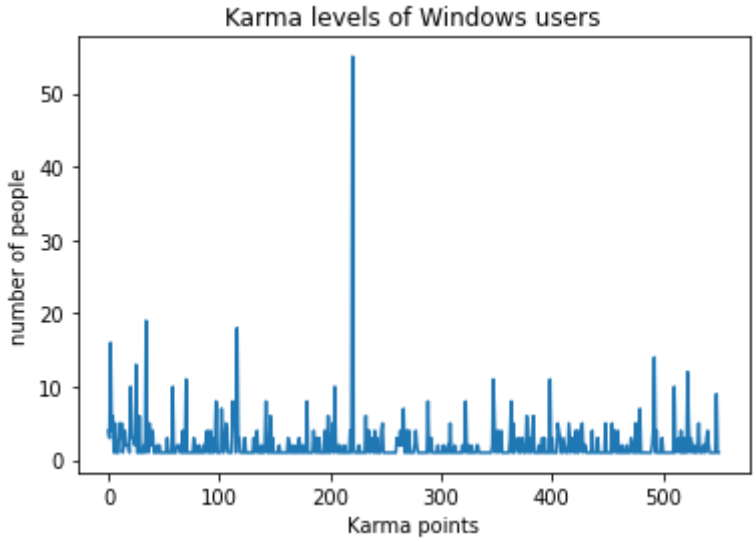
Subreddit	Polite Comments	Impolite Comments	Total Comments	Percentage of Politeness Comments
r/Linux	5677	1487	7164	0.79%
r/Windows	1444	332	1776	0.81%

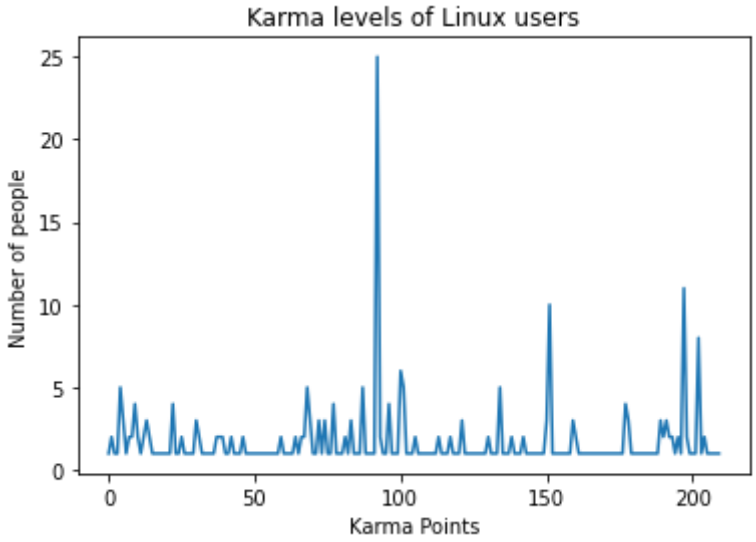
We find that the Percentage of politeness comments is slightly lower in the case of the Linux Subreddit. This was true at a lower scale of data as well which contributes to its accuracy. The slightly lower level of politeness in the community could be due to the fact that there is a significant difference in the communities in general.

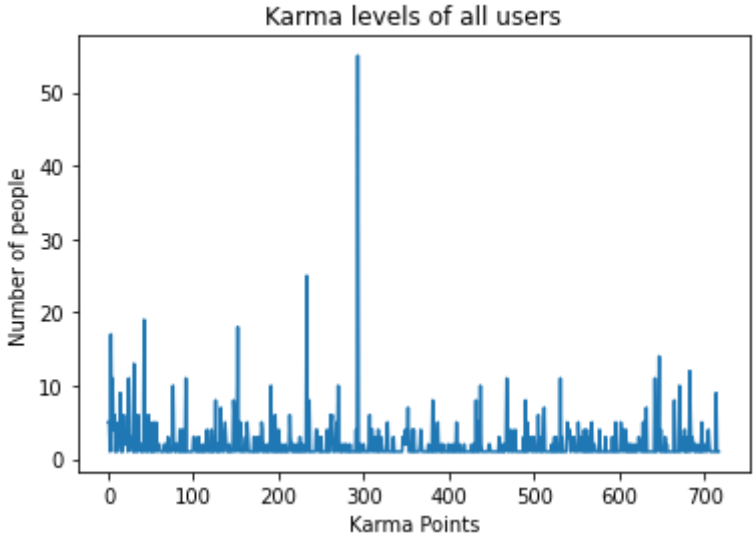
Phase-3: Politeness and Social Status

How does Karma(Social Status) relate to politeness?

In order to find relations between Karma and Politeness, we have first gathered the data containing karma of reddit users of the comments we have collected. The karma vs number of people distribution is given below:







Overall, we see a very similar distribution of karma levels among people from the collected data, with a sudden peak at the middle range of the data. Now that we have the data needed, we proceed to analyze how this karma is related to people's politeness.

To find out how politeness relates with reputation(karma), we have divided the data into 3 parts according to their karma levels, the results of the analysis are as shown in the below table.

Politeness levels of Reddit users with respect to their reputation

Category	High Reputation	Medium Reputation	Low Reputation
Windows	82.47%	69.92%	78.87%
Linux	75%	66.11%	80.83%
Overall	80.4%	69.69%	79.12%

These are fascinating results since they are unique compared to previous experiments and follow a definite pattern even among different communities(windows and Linux).

Overall, we see that the Higher reputed and Lower reputed populations tend to be more polite than the Middle reputed people. This could be due to multiple factors. High Reputed people in the community are often community helpers or are associated with the organization itself (windows/Linux), which is why they could be more polite than the rest of the community. They often provide technical support and help people in the subreddit, due to which they usually gain Karma. Lower reputed people consist of people who are new to Reddit or regular people who mainly ask questions. In the first case, politeness is due to the lower level of familiarity with the community; people tend to be polite when talking with someone new. In the latter case, people who ask questions also want someone to answer them, due to which they tend to be more polite.

However, in the Medium reputed community, we observe the least amount of politeness in both the Linux and Windows subreddits. This is because a rise in status leads to a decline in politeness, a similar study we have used for reference has made these observations, and we have used a similar hypothesis for our study. However, we see that the hypothesis fails when looking at Higher Reputed people as they tend to be more polite than the Middle reputed people. The reasons for this were mainly due to the change in the area of study. Reddit is an entirely different community compared to StackExchange. The fact that we are only focusing on requests in the Windows and Linux communities contributes to this result. Hence we conclude that the relationship between politeness and social status is not so direct and is dependent on many other social factors.

Conclusion

We evaluate an existing politeness classifier trained on Wikipedia and StackExchange by testing it on annotated Reddit data and conclude that it effectively works in modern-day social media such as Reddit. The politeness strategies used to model the classifier work for informal communication platforms such as Reddit. We have seen how politeness relates to Group Identity. Even though the politeness levels followed a general pattern in both the communities due to the similarity in their structure, we see that their differences contribute to the politeness levels in a few of their communities. We found that the Linux community had lower politeness scores in general.

We then see how Social Status relates to politeness. Do people with more power/reputation tend to be more impolite all the time? The answer we obtained from our analysis was **no**. Although power can affect politeness directly, there can be many other social factors affecting politeness. Our study found that higher reputed people tend to be more polite than the middle reputed population group. This was due to different social factors such as responsibility in the community. However, we also see that Lower reputed people tend to be more polite than people with higher reputations (middle reputed). Therefore, we conclude by saying that the study has only begun to explore the relationship between politeness and social factors such as power, status, gender, and community membership. Further analysis can show more observations in this field.

Resources

- Politeness (cornell.edu)
- Evaluating a Computational Approach to Labeling Politeness: Challenges for the Application of Machine Classification to Social Computing Data
- The politeness package: Detecting politeness in natural language)
- Scraping Reddit data. How to scrape data from Reddit using... | by Gilbert Tanner | Towards Data Science
- Reddit Help
- PRAW: The Python Reddit API Wrapper — PRAW 7.5.0 documentation

THE END