Twitter Dataset on the Russo-Ukrainian War

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Abstract

On 24 February 2022, Russia invaded Ukraine, also known now as Russo-Ukrainian War. We have initiated an ongoing dataset acquisition from Twitter API. Until the day this paper was written the dataset has reached the amount of 57.3 million tweets, originating from 7.7 million users. We apply an initial volume and sentiment analysis, while the dataset can be used to further exploratory investigation towards topic analysis, hate speech, propaganda recognition, or even show potential malicious entities like botnets.

Introduction

Twitter consists one of the most popular and widespread online social networks and one of the main sources of communication and dissemination in the online world. It has been used in the past to analyse crises in the political world (Siapera, Hunt, and Lynn 2015; Chibuwe 2020; Chiluwa and Ifukor 2015). Considering this, we have initiated a data collection from Twitter API started on 24 February 2022 when Russia invaded Ukraine, also known as the Russo-Ukrainian War. The main goal is to use this data to analyze the main trends and topics discussed in this online discourse, watch the tendencies of users, the suspension of potential malicious entities, the sentiment of the text, the hate speech, or any propaganda that may be visible through OSNs.

Up to this date, the dataset contains 57,384,192 tweets and originated from 7,744,714 users.

Data availability

The dataset is available on Github, at https://github.com/alexdrk14/RussoUkrainianWar_Dataset, but due to privacy restrictions applied by Twitter API, we only provide the tweet IDs. The research community can retrieve the Twitter dataset from Twitter API using these IDs, considering the tweets are publicly available.

Methodology

We perform some initial analysis over the collected dataset. In this section, we provide only a glimpse of our analysis, which is deployed in an online web service located here: https://alexdrk14.github.io/RussiaUkraineWar/. Note that the plots are updated on a daily basis.

Volume analysis

In figure 1 we present the volume of tweets per day, while in figure 2 we show the volume of the suspended or deactivated accounts per day. We notice an increased activity in the first days of the attack, while the suspended accounts are increasing.



Figure 1: The Daily volume and activity of registered users.

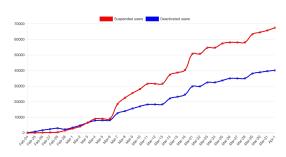


Figure 2: Daily volume of suspended/deactivated accounts.

Figure 3 shows the daily volume of traffic based on the text language of the tweet. We only presented the ten most popular languages in the collected dataset. We notice that the language used in the majority of tweets is English.

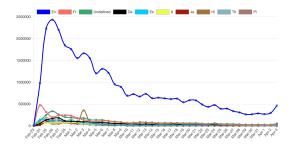


Figure 3: Daily volume of traffic based on text language.

Figure 4 presents the daily volume of HTs traffic, while only the ten most popular hashtags in the collected dataset are included. As it seems, the most popular HT is #Ukraine.

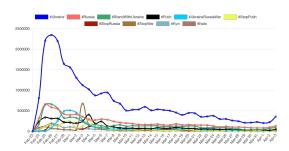


Figure 4: Daily volume of HTs traffic

Finally, in figure 5 we show the total volume of tweets, based on text language, where we present all the languages in the collected dataset. As shown in figure 3, the most popular language in tweets is English.

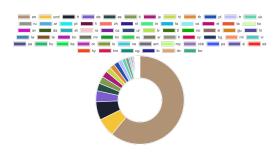


Figure 5: Total tweets' volume based on text language

Sentiment Analysis

In this subsection, we present an initial sentiment analysis of the collected dataset by using Vader (Hutto and Gilbert 2014). The results are shown in the figure below.

Specifically, in figure 6 we show the daily positive sentiment between Ukraine and Russia, with the higher values representing bigger support by Twitter users.

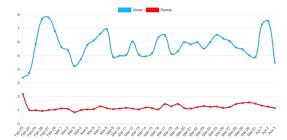


Figure 6: Daily positive sentiment between Ukraine and Russia.

Figure 7 shows the negative sentiment between Ukraine and Russia per day, with lower values corresponding to higher disagreement (sadness, rage, etc.) by Twitter users.

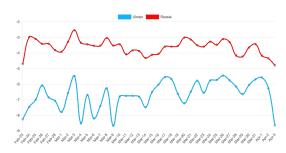


Figure 7: Daily negative sentiment between Ukraine and Russia.

Finally, we plot the positive and negative sentiment between Ukraine and Russia Presidents in figures 8, 9 with higher values showing bigger support by Twitter users in positive sentiment while lower values show higher disagreement (sadness, rage, etc.) by Twitter users.



Figure 8: Daily positive sentiment between Ukraine and Russia Presidents.

Hashtag	# of tweets
#Ukraine	28,578,739
#Russia	9,070,451
#StandWithUkraine	6,826,617
#Putin	4,851,536
#UkraineRussiaWar	4,007,785
#StopRussia	2,346,969
#StopPutin	2,332,136
#StopWar	1,877,518
#Kyiv	1,777,401
#NATO	1,686,092

Table 1: Ten most popular hashtags in our dataset

Language	# of tweets
English	35,007,332
Unclear/Mix	3,883,865
French	3,821,685
German	2,333,747
Spanish	1,606,082
Italian	1,541,243
Japanese	1,353,848
Hindi	1,076,816
Thai	1,047,481
Polish	1,012,907

Table 2: Ten most popular text languages in our dataset



Figure 9: Daily negative sentiment between Ukraine and Russia Presidents.

In table 1 we show the total number of tweets contained in each hashtag, for the ten most popular hashtags retrieved in our dataset, while in 2 we show the total number of for each language, only for the top ten most popular languages in our dataset.

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