This report is the first in a series that Mythos Labs will publish over the next several months, as part of a project to counter online disinformation and malign narratives related to Ukraine.

INTRODUCTION
In recent weeks, Russia has amassed over 120,000 troops on the border with Ukraine, escalating tensions in the region. This show of force is playing out in cyberspace as well, with pro-Russia and anti-US/NATO actors spreading disinformation/propaganda on social media. From November 3 - 23, Mythos Labs leveraged its AI-based MIDAC software, as well as the expertise of local researchers, to identify and analyze coordinated networks of accounts spreading Ukraine-related disinformation/propaganda on Twitter.

METHODOLOGY
At the start of the project, Mythos Labs developed a list of “keywords” related to Russian military activity around Ukraine in three languages: English, Ukrainian and Russian. The purpose of the keywords was to capture all conversation points on Twitter regarding the Russian troop build-up, a potential Russian invasion of Ukraine, and Russian attempts at manipulating public opinion with disinformation. Keywords included terms such as “Russia invades”, ”український кордон” and “Украина агресия” in English, Ukrainian and Russian.

For three weeks (from November 3 to November 23), Mythos Labs’ MIDAC algorithm continuously captured tweets that contained one or more keywords and stored them in a secure, dynamic database.

After the monitoring algorithm had collected users and tweets for two weeks, MIDAC used this data to build a retweet network of users tweeting about Russian military activity related to Ukraine, with nodes representing users and edges representing retweets. Next, MIDAC constructed an Ising energy model for the probability of the users being Accounts of Interest and this model was mapped to an energy graph. Lastly, a "minimum cut" algorithm was applied to the graph and the resulting output identified 153 Accounts of Interest, i.e. accounts tweeting an extraordinarily high volume/frequency of tweets (over 10X the mean of all users in the network) related to the topic of Russian military aggression against Ukraine.

MIDAC then collected the previous 3,000 tweets of all 153 Accounts of Interest to identify how many of these accounts appear to be part of a coordinated network, i.e. a group of accounts that consistently amplifies a shared set of source accounts and talking points. First, MIDAC used a spectral clustering algorithm based on the Jaccard Index, a statistic used for measuring degrees of similarity within members of a set. The algorithm identified two clusters that were each retweeting a common set of source accounts, Cluster A consisting of 95 Accounts of Interest amplifying 7 source accounts and Cluster B consisting of 58 Accounts of Interest. amplifying 10 source accounts.

Human researchers then analysed the profiles and tweets of source accounts being amplified by each cluster, in order to determine if the accounts in that cluster were espousing a shared set of talking points. For example, the profiles of all source accounts being amplified by Cluster B revealed support for Russian aggression in Ukraine, Russian action in Donbass, and the Russian Federation. Therefore, the accounts in cluster B were labelled a network of Pro-Russia accounts. The source accounts being amplified by Cluster A, on the other hand, were not all espousing the same talking points. Some were neutral and others were pro-Ukraine, so the accounts in this cluster were not determined to be a coordinated network.
KEY FINDINGS

1. A Coordinated Network of 58 Accounts on Twitter is Spreading Pro-Russian, Anti-US and Anti-NATO Disinformation and Malign Narratives

These 58 accounts are amplifying a shared set of source accounts and talking points. Some of the most common narratives expressed by the accounts in this network include:

- The USA is pressuring Ukraine to start an offensive in Donbas; America is responsible for chaos in Ukraine and wants to drag the EU into a war (figure 1)
- Ukraine is acting aggressively and is preparing a military offensive in Donbas and Crimea, trying to drag Russia into a war (figure 2)
- Ukrainian armed forces are committing war crimes against civilians in Donbas (figure 3)
- NATO expansion is a threat to Russia and joining NATO would be a mistake for Ukraine (figure 4)
2. Activity of Accounts Spreading Pro-Russian Disinformation/Propaganda Increased by over 3,300% in November
Accounts spreading pro-Russian disinformation/propaganda tweeted about Ukraine 213 times a day on average in November, compared to just 6 times a day in the period between January and November. This represents a 3,334% increase in daily activity.

3. Increase in Activity of Accounts Spreading Pro-Russian Disinformation/Propaganda May Predict Surges in Russian Troop Levels
In the past year, there have been two significant buildups of Russian troops along the Ukrainian border—one in early April and one in early November. In both cases, the volume of Ukraine-related tweets by accounts spreading pro-Russian disinformation/propaganda spiked approximately two weeks before the buildup of troops began. As the graphs below indicate, the volume of Ukraine related tweets by the Pro-Russian disinformation/propaganda network spiked in mid-March of 2021 (two weeks before the spring military buildup) and again in mid-October, 2021 (two weeks before the beginning of the current surge in troop levels).

This suggests that a spike in the number of Ukraine-related tweets by accounts spreading pro-Russian disinformation/propaganda could predict a surge in troop levels two weeks in advance. Continued monitoring is needed to test this correlation but if confirmed, it would be a way to gain valuable intelligence about upcoming Russian troop activity and predict future surges in Russian troop levels along the Ukrainian border.
4. Accounts Previously Tweeting Pro-Russian Disinformation/Propaganda about other Topics are now Tweeting Mostly about Ukraine, Indicating that Ukraine has become a Top Priority

Prior to November of 2021, the network of accounts identified in this analysis was tweeting very little about Ukraine (less than 6 tweets a day) and mostly about other issues, e.g. blaming the U.S. and NATO for the Libyan conflict or portraying the U.S. and Canada as aggressors against China.

The fact that these same accounts are now tweeting primarily about Ukraine (over 213 Ukraine-related tweets per day) indicates that pro-Russian networks are shifting their focus away from other issues and towards Ukraine, as illustrated by the below word clouds.

5. Accounts Spreading Pro-Russian Disinformation/Propaganda are Trying to Influence both Russian-speaking and Western Audiences

After Russian, the most common language that accounts spreading pro-Russian disinformation/propaganda related to Ukraine are tweeting in is English, followed by French (the two official languages of NATO). This suggests an effort to influence public opinion in western countries including members of the EU and NATO.
6. Accounts Spreading Pro-Russian Disinformation/Propaganda Amplified Tweets by Russian State Media, Dubious News Outlets and Popular Disinformation Spreaders

The following ten “source accounts” were consistently amplified by the network of accounts spreading pro-Russian and anti-US/NATO disinformation/propaganda related to Ukraine:

<table>
<thead>
<tr>
<th>Source Account</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>@rianr1 (2.6 mln followers)</td>
<td>Russian State Media</td>
<td>Belongs to Russian state-owned news agency RIA Novosti, which broadcasts official Kremlin messaging</td>
</tr>
<tr>
<td>@DonbassSegodnya (23.4k followers)</td>
<td>Accounts Posing as Independent Media, but Biased towards Russia</td>
<td>Poses as a legitimate news outlet ‘reporting events on both sides of the contact line’ in Donbas, but in fact tweets anti-Ukrainian disinformation and pro-Russian points of view</td>
</tr>
<tr>
<td>@anatolisharii (258.5k followers)</td>
<td>Real-user Accounts</td>
<td>@anatolisharii is a Ukrainian pro-Russian blogger and politician who currently lives in Spain and has a popular YouTube channel. He constantly shares anti-Ukrainian narratives and disinformation on his social media platforms. Sharri is under investigation by Ukraine’s security services SBU. His political party in Ukraine is supported by 2.7% of Ukrainians, according to the latest polls.</td>
</tr>
<tr>
<td>@hvN_NaTa (5900 followers)</td>
<td></td>
<td>@hvN_NaTa is a user, who, according to the profile description, is based in occupied Donbas and spreads pro-Russian, anti-Ukrainian/anti-US/NATO disinformation.</td>
</tr>
<tr>
<td>@AntonGolovnev91 (2800 followers)</td>
<td></td>
<td>@AntonGolovnev91 profile description says he is a part of pro-Putin youth movement and is based in Russia. He tweets in support of Russian proxy forces in Donbas.</td>
</tr>
<tr>
<td>@RadioStydoba (52.2k followers)</td>
<td>Suspected Inauthentic Accounts</td>
<td>These accounts spread pro-Russian, anti-Ukrainian and anti-US/NATO disinformation, as well as some entertainment content (probably in order to attract followers). They have several thousands of followers (many of which are other suspicious accounts)</td>
</tr>
<tr>
<td>@OnbwfUHE27qbmMu5 (5,300 followers)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@SergUA63 (5,661 followers)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@EFm6o9qE2WMu0CZ, @d5sayyUALx0LsBL</td>
<td></td>
<td></td>
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</tbody>
</table>

CONCLUSION AND PRIORITIES FOR FUTURE RESEARCH

Over the next several months, Mythos Labs will further investigate coordinated networks of Twitter accounts spreading disinformation/propaganda related to Ukraine. This will include the following research activities:

1. **Continue Monitoring Identified Network of Accounts Spreading Pro-Russian and Anti-US/NATO Disinformation/Propaganda**
   
   This will empower researchers to identify new narratives, monitor the growth of the network and further study the correlation between activity of accounts in this network and increases in Russian troop levels.

2. **Analyze Differences in Messaging by Language**
   
   A detailed textual analysis of the malign narratives shared by pro-Russian networks in various languages will reveal potential differences in messaging directed at separate audiences, enabling the development of more targeted counter-messaging.

3. **Measure the Influence of Accounts Spreading Pro-Russian and Anti-US/NATO Disinformation/Propaganda**
   
   This will include using opinion dynamics modeling to map the reach and quantify the influence of accounts spreading pro-Russian and anti-US/NATO disinformation/propaganda.
AUTHORS

Olga Tokariuk, Lead Author
Olga Tokariuk is an independent journalist and researcher based in Kyiv, Ukraine specializing in Ukrainian politics and the impact of disinformation on democracies. She is a former head of the foreign news desk at the independent Ukrainian Hromadske TV and has extensive experience working with Ukrainian and international media including EFE news agency (Spain), RAI, ANSA (Italy), BuzzFeed News, NPR (USA), ABC (Australia) and RSI (Switzerland). A Non-resident Fellow at the Center for European Policy Analysis (CEPA), Olga co-authored an investigative documentary about a controversial trial of Ukrainian soldier Vitaliy Markiv in Italy and published a research paper on the role of Russian disinformation in this case. She holds an MA in political science and international relations from the University of Bologna (Italy) and in journalism from the Taras Shevchenko University of Kyiv (Ukraine).

Priyank Mathur, Co-author
Priyank Mathur is Founder and CEO of Mythos Labs, a social enterprise that uses technology and media to counter mis/disinformation and online harm. He has authored multiple reports commissioned by UN Women and the European Commission researching online disinformation and hate speech in Asia and Europe. Previously, Priyank served as a Policy Advisor at the US Department of Homeland Security (DHS) and as Global Consulting Director at Ogilvy and Mather. Priyank is the host of several documentaries and podcasts related to international security, including the United Nations’ ExtremeLives and Let’s Talk About ISIS in India. His work has been profiled on international outlets including CNN, Devex, Bangkok Post, India Ahead TV, Quartz and the Singapore Ministry of Home Affairs’ Home Team Journal. Priyank holds an MBA from MIT Sloan School of Management, as well as an M.A. and B.A. in International Relations from Boston University.

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ABOUT MYTHOS LABS
Mythos Labs is a social enterprise that uses technology and media to counter online harm and mis/disinformation. Mythos Labs’ primary activities include using its AI-based technology MIDAC to research mis/disinformation, creating “edutaining” viral videos that convey positive narratives and conducting digital literacy capacity building programs.

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