Analyzing the Dissemination of Violent Media and Rhetoric across Parler

Daniel Brinkman

Description of Project

This project will seek to clarify the sources and spread of extremist worldviews and the aspects of message content and conveyors that facilitate adoption, spread, and impact on reported behavior based on the open-source Parler dataset. Parler was a social media site advertised as a "free speech project", however various racist views were common amongst the posts there (Manavis, 2020). Parler was shut down in early 2021 as it was influential in the storming of the Capitol Building on January 6, 2021 which resulted in the deaths of 5 individuals (Guynn, 2021). This data will be analyzed with social network and diffusion models, topic and sentiment modeling, and explainable artificial intelligence modeling of behavior to determine the factors contributing to message influence. Applied Machine Learning packages and trend-over-time analyses will be employed on the data to evaluate origin points of trends as they emerge and gain popularity, especially the notably violent or notably popular hashtags or images. This FUSE grant seeks to extend current research funded by the NRI Collaboration Initiative project "*Understanding and Limiting the Influence of Extremist Social Media Propaganda: A Multidisciplinary Approach.*"

Hate speech, while unfortunately common given the low entrance barriers of the internet, is currently difficult to define in terms in which computational sentiment analysis tools can understand. While excellent attempts have been made to begin the automation of detecting hate speech via methods such as machine learning classifiers, it is still an emerging field and in need of elaboration (MacAvaney et al., 2019). Although the boundaries of hate speech may not have a singular definition or even a benchmark dataset at this time, public repositories for hate-based text or images exist (MacAvaney, 2021). Currently, there is not a unified analysis of text and visual content available when analyzing violent media. This is needed to better classify and provide similar context into how violent views spread. Understanding the spread of these views is imperative to understanding their impact and providing more accurate and nuanced ways to detect them.

This project's goals are twofold: 1) analyze the data recovered from Parler; 2) begin the process of differentiating the employed rhetoric itself to further our real-world understanding of the differences between perspective-based speech and illegal activities in online social media. The Parler data dump[1] is an ideal dataset for this analysis because it is a strictly partisan dataset that contains both lawfully protected speech as well as hate speech and incitement-based content linked to the January 6, 2021 siege of the US Capitol building.

Methodology

To address the research goal, this study will utilize approximately 32.1 terabytes of image and media data, and/or 38 terabytes of text data harvested from the now-defunct partisan social media platform Parler. The text data will be parsed to ensure that it is the raw text being analyzed and that there are no identifying tags or other personally identifying information involved. While this information is public, any information that may possibly be identifying will be omitted. Information such as location data from images and videos may be used to differentiate speech used to prompt real-world events and partisan speech, and hashed account IDs may be used to generate network graphs. Some work has already been performed to determine hashtag frequency over time, which allows this work to expand on that to assess potential "predecessors" to violent hashtags. An initial dive into the data clearly demonstrates an increase in "civil war" hashtag frequency in the summer months prior to the 2020 election (Anonymous, 2021).

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[1] https://github.com/sbooeshaghi/parlertrick

Due to the diversity and size of the data compared to the length of the project, we will rely on existing toolkits for the analysis of text and images.

Determining the spread of content over time as well as what content is popular amongst specific groups will allow us to understand the spectrum between partisan rhetoric and hate speech, and to analyze the creation of belief communities (C. Alchourrón et al., 1985). ***We hypothesize that increasing unification of previously diverse belief communities increases the likelihood of spreading hate-oriented speech in partisan groups.***
We anticipate that these models will support and further develop the ongoing project, showing the importance of belief, narrative, identity, ideology, leadership, and communal structure in extremist rhetoric spread and influence. **This research will support the main project's goals of identifying ways of limiting the spread and influence of extremist worldviews**, including counter-messaging, public policy changes, image management, and changes in social media management.

Project Timeline

Weeks 1-3	Collect, clean, and parse data. Begin research of how to classify data.
Weeks 4-7	Begin testing methods for data analysis. Start testing for errors and scalability.
Weeks 8-9	Ensure methods are properly documented. Analyze accuracy/precision. Develop and evaluate graphs of sentiments and hashtags over time.
Weeks 10-13	Begin image analyses. Follow up on any lasting interesting points recovered from previous weeks.
Weeks 14-15	Gather results and formulate them into final paper.

Student/Faculty Mentor Roles:

Daniel Brinkman: As the primary researcher for this project, Mr. Brinkman's responsibilities will include collecting and parsing all data, instantiating packages needed to analyze data (R or Python), interpreting results, creating the initial drafts of all dissemination materials, and presenting at the Student Research and Creative Activity Fair.

Drs. Magie Hall and Robin Gandhi: Dr. Hall served as the original co-PI UNO in the funded NRI project. She will continue to support the research development over the summer. Dr. Gandhi will become the co-PI of the funded grant after the conclusion of Dr. Hall's contract at UNO and will serve as the on-campus representative to support Mr. Brinkman and assure compliance with the terms of the FUSE award.

Disclosure of Previous Internal Funding

I have not received previous funding via FUSE or UCRCA.

Budget and Budget Justification

   I am requesting $2,500 of funding for this project, outlined below.

<u>Materials</u>:

  1) AWS S3 and/or EC2 Credit - $500

   The data storage costs for this large dataset could exceed the $500 materials budget and may mean I allocate some of my personal stipend toward the storage of the data. However, there may be a way to either eliminate or significantly reduce these storage costs. If so, I will be using this materials budget toward renting a cloud platform to perform analysis on the data. This will be significantly faster than anything I currently have available to me and will allow me to run larger batches of data as well. Alternatively, I may rent a server via Paperspace, depending on costs and required compute power.

<u>Stipend</u>:

   I am requesting $2000 for a stipend for this study. This would be 125 hours at $16/hour, putting me just under 10 hours/week for the duration of the summer.

References

A. (2021, January 30). Violent hashtag frequencies in Parler. Retrieved from https://medium.com/swlh/violent-hashtag-frequencies-in-parler-eddab2871b66

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Guynn, J. (2021, February 12). 'Burn down DC': Violence that erupted at capitol was incited by Pro-trump mob on social media. Retrieved from https://www.usatoday.com/story/tech/2021/01/06/trump-riot-twitter-parler-proud-boys-boogaloos-antifa-qanon/6570794002/

MacAvaney, S., Yao, H., Yang, E., Russell, K., Goharian, N., & Frieder, O. (2019). Hate speech detection: Challenges and solutions. *PLOS ONE, 14*(8). doi:10.1371/journal.pone.0221152

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02 March 2021

FUSE Review Panel

To the Review Panel Regarding the Application of Mr. Daniel Brinkman:

Please accept my recommendation for Mr. Daniel Brinkman. Mr. Brinkman has worked for Dr. Zhong studying debris detection on runways while he completes the requirements for his dual majors in Computer Science and Cybersecurity. Before this position, he was a tutor in the Computer Science Learning Center. He plans to continue his studies at UNO by pursuing graduate studies in Computer Science or IT Innovation. This proposal represents Mr. Brinkman's first independent research project; he is currently enrolled in one of my upper-level Bachelors courses as an elective. Mr. Brinkman is a capable young scholar, who is keen to use this first research experience to position himself for graduate school. In the time since I've worked directly with him, I have been quite impressed with his work ethic and leadership.

Mr. Brinkman's project represents an extension of a granted NRI Collaboration Initiative project across UNO and UNL (PI-Mario Scalora, UNL). Whereas the granted project concentrates on radical discourse in open social media, this proposed project drills into partisan social media in order to support a more fined-tuned analysis of the differences between fringe and dangerous discourse online. The extension is timely and the use of text and images in this type of research is novel. Mr. Brinkman will benefit from extensive expertise in computational and political sciences associated with the project. As I am ending my position at UNO but plan to maintain a courtesy appointment, Dr. Robin Gandhi (Director, SI2; Associate Prof. in Cybersecurity) will take over as co-PI on my grant and has agreed to serve as the on-campus representative for Mr. Brinkman. Pending good collaborating this summer, an open GRA position funded by the project is a real possibility. Successful results in this extension study will enable researchers, practitioners, and policy makers to use data in order to better manage social media discourse and policies supporting open social discourse.

I am convinced that Mr. Brinkman will greatly benefit from receiving FUSE funding to further his academic career and thus fully endorse his application. I would be delighted to provide further comments if requested.

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