Hate is not Binary: Studying Abusive Behavior of #GamerGate on Twitter

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Hypertext
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Social networking applications contain user profiles, variety of resources, and activities.
Twitter

- A microblogging service
- Sharing of up to 140-character messages
- Sharing of any kind of content
Cyberaggression: purposefully saying or doing something to hurt someone once

Cyberbullying: intentionally aggressive behavior, repeated over time, that involves an imbalance of power
What distinguish Abusers from Typical twitter users?
Open Questions

- What are the characteristics of abusers and typical twitter users?

- How users’ emotional and activity characteristics can be used for distinguishing among different users’ behaviors?
Goal No2

How the Suspension and Deletion mechanism works on Twitter?

Is this goodbye?
Are you sure you don’t want to reconsider? Was it something we said? Tell us.

Before you deactivate [username], know this:

- We will only retain your user data for 30 days and then it will be permanently deleted. You can reactivate your account at any point within 30 days of deactivation by logging back in.
- You don’t need to deIVATE your account to change your username or Twitter URL. You can change it on the settings page. All @replies and followers will remain unchanged.
- If you want to use this account’s username or email address on another Twitter account, change it before you deactivate. Until the user data is permanently deleted, that information won’t be available for use.
- Your account should be removed from Twitter within a few minutes, but some content may be visible on twitter.com for a few days after deactivation.
- We have no control over content indexed by search engines like Google.
Open Questions

– What is the twitter account status and how do we measure it?

– What are the characteristics of suspended users and users who deleted their Twitter account?

– What are the characteristics of users who remain active on Twitter, but should have been suspended?

– Can we emulate the Twitter account suspension mechanism?
Datasets

Crawling from June to August 2016:

- **Baseline**: 1M random tweets
- **Hate-related**: 650K tweets based on 309 bully- and hate-related hashtags

309 hashtags: #GamerGate and 308 co-appeared ones
Gamergate Controversy

- A coordinated campaign of harassment in the online world
- It involves sexism, feminism, and “social justice” and takes place on social media like Twitter

Gamergate controversy provides us a unique point of view into online harassment campaigns
Goal 1
Considered Axes

- **Emotional characteristics**: sentiment, emotions, offensive, emoticons, uppercase

- **Activity characteristics**: account age, # posts / lists / favorites, mentions, followers, friends
Emotional Characteristics

CDF vs. # emoticons

CDF vs. # uppcercases

CDF vs. sentiment

CDF vs. joy
Emotional Characteristics - Findings

Emoticons and “shouting” by using all capital letters:
- GGers and baseline users use emoticons at about the same rate
- GGers tend to use all uppercase less often than baseline users

Sentiment, Emotion, and Offense
- GGers post tweets with a generally more negative sentiment
- GGers use more hate words than random users (Hatebase database)
- GGers and baseline users do not differ substantially in a variety of emotions: anger, disgust, fear, sadness, surprise
- GGers are less joyful — they are not necessarily angry, but they are apparently not happy
Activity Characteristics

CDF of account age (days)

CDF of # posts

CDF of # mentions

CDF of # friends
Activity Characteristics - Findings

- GGers tend to have older accounts → greater familiarity with Twitter
- GGers are significantly more active than baseline Twitter users, i.e., more posts
- GGers make more mentions within their posts → higher number of direct attacks compared to random users
- GGers tend to have more friends and followers than random users → the controversy appears to be a clear “us vs. them” situation
Goal 2
Twitter Reaction to Harassment

- Focus on a sample of 33k users
- Users tend to be suspended more often than delete their accounts
- Random users are more prone to be suspended or delete their accounts than GGers
Emotional Characteristics

![CDF plots for different emotions and conditions](image-url)
Emotional Characteristics - Findings

Suspended accounts:
- GGers are expressing more aggressive/repulsive emotions, and offensive language
- 30% of GGers post more negative tweets than baseline users / the rest of the GGers are more positive

Deleted accounts:
- GGers exhibit higher anger in their posted tweets
- GGers exhibit less joy, but more sadness and fear
- GGers tweet with more negative sentiment
- GGers type less in all uppercase
Activity Characteristics

CDF vs account age
- Red: Gamergate_deleted
- Green: baseline_deleted
- Black: Gamergate_suspended
- Blue: baseline_suspended

CDF vs friends
- Red: Gamergate_deleted
- Green: baseline_deleted
- Black: Gamergate_suspended
- Blue: baseline_suspended

CDF vs posts
- Red: Gamergate_deleted
- Green: baseline_deleted
- Black: Gamergate_suspended
- Blue: baseline_suspended

CDF vs lists
- Red: Gamergate_deleted
- Green: baseline_deleted
- Black: Gamergate_suspended
- Blue: baseline_suspended

RISE HT'17
Activity Characteristics - Findings

- Suspended and deleted GGers are more active overall than baseline users

- Deleted users have less support from their social network (less followers/friends)

- Deleted GGers exhibit the highest activity in comparison to deleted baseline and suspended GGers
Who should be suspended?

- What homogeneity or commonalities users have?
- Group users based on an unsupervised clustering method: \( k \)-means.
  - Which is the optimal number of clusters? - EM algorithm.
Clustering tendency of baseline users

<table>
<thead>
<tr>
<th>Status →</th>
<th>Cluster</th>
<th># active</th>
<th># deleted</th>
<th># suspended</th>
</tr>
</thead>
<tbody>
<tr>
<td>active</td>
<td>1</td>
<td>4,999</td>
<td>1,501</td>
<td>658</td>
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<tr>
<td>deleted</td>
<td>2</td>
<td>1,984</td>
<td>392</td>
<td>439</td>
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<tr>
<td>suspended</td>
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<td>4,200</td>
<td>690</td>
<td>3,832</td>
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<tr>
<td></td>
<td>4</td>
<td>3,333</td>
<td>373</td>
<td>134</td>
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<tr>
<td></td>
<td>5</td>
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<td>257</td>
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<tr>
<td></td>
<td>8</td>
<td>433</td>
<td>85</td>
<td>71</td>
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Table: Emotional-related features.

<table>
<thead>
<tr>
<th>Status →</th>
<th>Cluster</th>
<th># active</th>
<th># deleted</th>
<th># suspended</th>
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</thead>
<tbody>
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<td>1,121</td>
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<td></td>
<td>8</td>
<td>787</td>
<td>57</td>
<td>989</td>
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Table: Activity-related features.
Emulating the suspension engine

Classification results based on Gamergate dataset.

<table>
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<tr>
<th></th>
<th>Prec.</th>
<th>Rec.</th>
<th>ROC</th>
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</thead>
<tbody>
<tr>
<td>active</td>
<td>0.898</td>
<td>0.982</td>
<td>0.747</td>
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<tr>
<td>deleted</td>
<td>0.667</td>
<td>0.008</td>
<td>0.550</td>
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<td>suspended</td>
<td>0.669</td>
<td>0.407</td>
<td>0.865</td>
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<tr>
<td>overall (avg.)</td>
<td>0.867</td>
<td>0.886</td>
<td>0.747</td>
</tr>
</tbody>
</table>

Table: Emotional-related features

Classification results based on baseline dataset.

<table>
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<th></th>
<th>Prec.</th>
<th>Rec.</th>
<th>ROC</th>
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<tbody>
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<td>0.742</td>
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<tr>
<td>deleted</td>
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<td>0.674</td>
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<tr>
<td>suspended</td>
<td>0.803</td>
<td>0.598</td>
<td>0.882</td>
</tr>
<tr>
<td>overall (avg.)</td>
<td>0.692</td>
<td>0.755</td>
<td>0.761</td>
</tr>
</tbody>
</table>

Table: Emotional-related features
Findings

- GGers were existing Twitter users that were probably drawn to the controversy
- GGers do not exhibit common expressions of online anger
- Suspended GGers tend to become more popular and more active in terms of their posted tweets
- Deleted users exhibit signs of distress, fear, and sadness
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