

Online Social Networks, Bots & Data

CS 579 Online Social Network Analysis

Dr. Cindy Hood
8/21/25

Logistics - Extra Credit

- ▶ Occasionally I will make extra credit assignments available during class
 - ▶ For main campus student, these assignment will be in-class
 - ▶ Online students will be given an opportunity to complete these assignments after watching the lecture
- ▶ These assignments will count as extra credit for up to 5% of your grade (I will decide depending on how many assignments I give out)
- ▶ These assignments will not be posted in the assignment section of Canvas
 - ▶ In lecture only
- ▶ No deadline extensions possible

Definition of Social Network

social network noun

- 1 : a network of individuals (such as friends, acquaintances, and coworkers) connected by interpersonal relationships
- 2 : an online service or site through which people create and maintain interpersonal relationships

And millions of people have become comfortable using smart-phones to share information about themselves, via mobile apps that access *social networks* such as Facebook and Twitter.

— *The Economist*

<https://www.merriam-webster.com/dictionary/social%20network>

Online social network vs. (real-life) social network

- ▶ Similarities?
- ▶ Differences?
- ▶ Data

Bots

What is a Social Media Bot? A Global Comparison of Bot and Human Characteristics

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Definition. (Social Media Bot)

user

An automated account that carries out a series of mechanics on social media platforms, for

content

content creation, distribution and collection, and/or for

interactions

relationship formation and dissolutions.

Figure 1: Definition of Social Media Bot. This definition displays the possibilities of mechanics that the bot account can carry out. A bot does not necessarily carry out all the mechanics.

<https://arxiv.org/html/2501.00855v2>

Bot detection

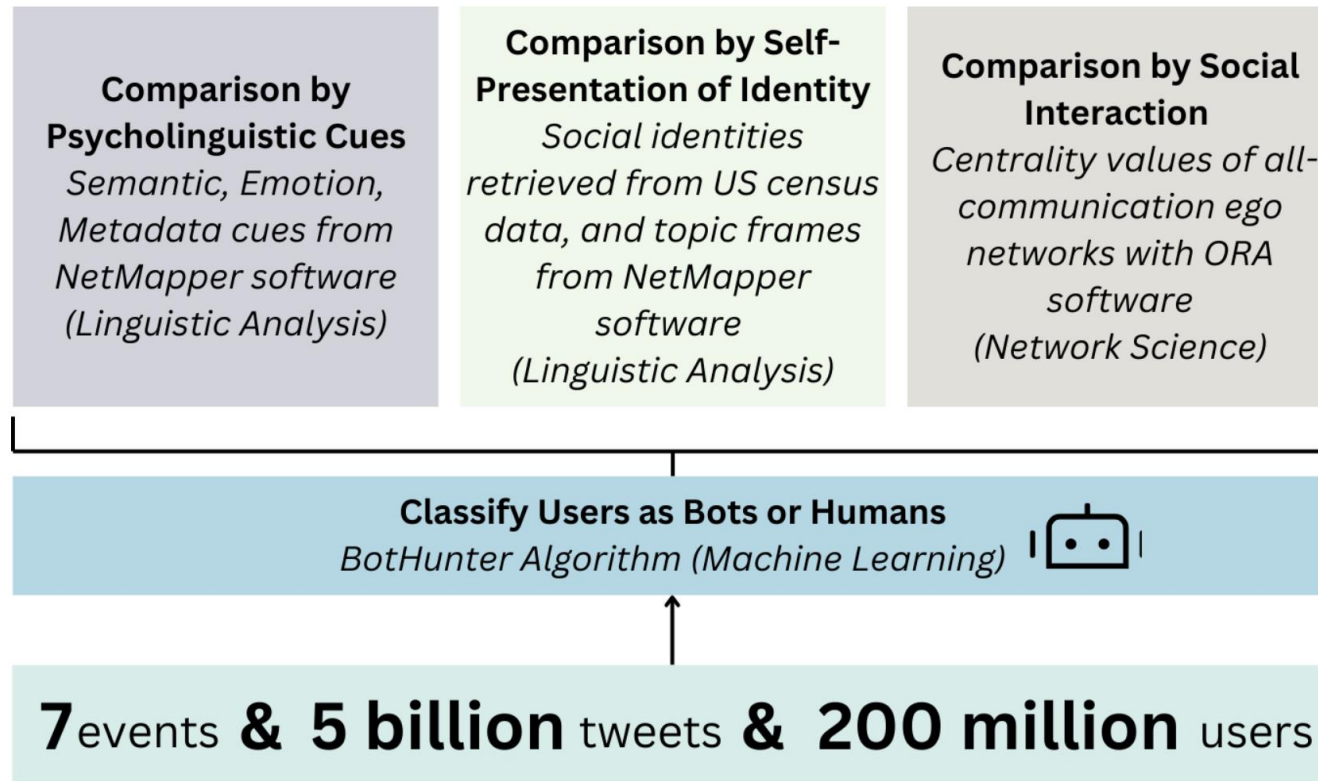


Figure 2: Illustration of multidisciplinary methods used for our analysis

<https://arxiv.org/html/2501.00855v2>

Bot detection results

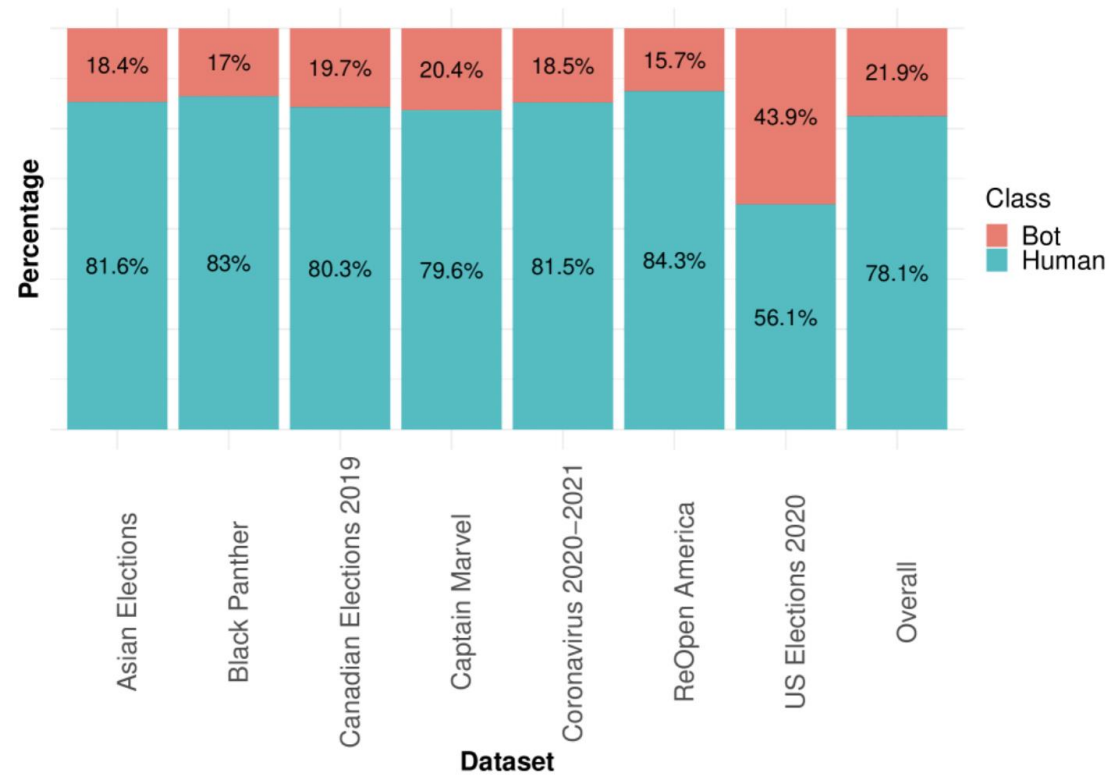


Figure 3: Comparison of Bot volume across events. The percentage of bot users across the events are on average around 20%.

<https://arxiv.org/html/2501.00855v2>

Bot Traffic

Bots now account for over half of all internet traffic

News

By Sead Fadilpašić published April 16, 2025


Plenty of the traffic falls on bad bots

The 2025 Imperva Bad Bot Report found this was the first time in a decade that 51% of all web traffic constituted bot traffic, attributing the shift largely to the rise of Artificial intelligence (AI) and Large Language Models (LLM).

<https://www.techradar.com/pro/security/bots-now-account-for-over-half-of-all-internet-traffic>

Researchers Made a Social Media Platform Where Every User Was AI. The Bots Ended Up at War

By AJ Dellinger

Published August 12, 2025 | Comments (89) | 

Social platforms like Facebook and X exacerbate the problem of political and social polarization, but they don't create it. A recent study conducted by researchers at the University of Amsterdam in the Netherlands put AI chatbots in a simple social media structure to see how they interacted with each other and found that, even without the invisible hand of the algorithm, they tend to organize themselves based on their pre-assigned affiliations and self-sort into echo chambers.

<https://gizmodo.com/researchers-made-a-social-media-platform-where-every-user-was-ai-the-bots-ended-up-at-war-2000642012>

Computer Science > Social and Information Networks

[Submitted on 5 Aug 2025]


Can We Fix Social Media? Testing Prosocial Interventions using Generative Social Simulation

Maik Larooij, Petter Törnberg

Social media platforms have been widely linked to societal harms, including rising polarization and the erosion of constructive debate. Can these problems be mitigated through prosocial interventions? We address this question using a novel method – generative social simulation – that embeds Large Language Models within Agent-Based Models to create socially rich synthetic platforms. We create a minimal platform where agents can post, repost, and follow others. We find that the resulting following-networks reproduce three well-documented dysfunctions: (1) partisan echo chambers; (2) concentrated influence among a small elite; and (3) the amplification of polarized voices – creating a 'social media prism' that distorts political discourse. We test six proposed interventions, from chronological feeds to bridging algorithms, finding only modest improvements – and in some cases, worsened outcomes. These results suggest that core dysfunctions may be rooted in the feedback between reactive engagement and network growth, raising the possibility that meaningful reform will require rethinking the foundational dynamics of platform architecture.

<https://arxiv.org/abs/2508.03385>

Data



DictionaryThesaurus

data

×

Q

Games & QuizzesWord of the Day

Dictionary

Definition

SynonymsExample SentencesWord HistoryPhrases ContainingRelated ArticlesEntries NearShow More

Save Word

data

noun

da·ta 'dā-tə 'da- also 'dä-

plural in form but singular or plural in construction

often attributive

[Synonyms of data](#)

1

: factual information (such as measurements or statistics) used as a basis for reasoning, discussion, or calculation

the *data* is plentiful and easily available

— H. A. Gleason, Jr.

comprehensive *data* on economic growth have been published

— N. H. Jacoby

2

: information in digital form that can be transmitted or processed

3

: information output by a sensing device or organ that includes both useful and irrelevant or [redundant](#) information and must be processed to be meaningful

Let's say we are going to build a social network of everyone in the class

- ▶ What information would be useful?

Your assignment (for extra credit)

- ▶ Get into groups and discuss what information would be useful for each class member to provide
- ▶ Create a few slides with the results
 - ▶ First slide should include the names of all the group members (so everyone gets credit)
 - ▶ One or more slides with the details of the information to be provided (be concise)
 - ▶ Categorize each piece of information as
 - ▶ Mandatory
 - ▶ Preferred
 - ▶ Optional
- ▶ For main campus students (section 1) - must be submitted by noon tomorrow (8/22)
- ▶ Please submit (one per group) to the One Drive Folder: [Extra Credit #1 - Proposed user data](#)
 - ▶ Note that you must submit from your Illinois Tech account

For online students (sections 2 and 3)

- ▶ Please do this assignment on your own or with other online students
 - ▶ You can find other students on the class piazza
- ▶ Submit to the class folder - [Extra Credit #1 - Proposed user data](#)
- ▶ Must be submitted by Aug 25 by midnight to be counted toward extra credit