

Accurate Engagement Model for Facebook User Profile

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ABSTRACT

A social network is a social structure of people, related (directly or indirectly) to each other through a common relation or interest. They can share and upload files such as images, videos, and audios to their profiles. Its sites are web based services that allow individuals to create a public profile, create a list of users with whom to share connections and to view and cross the connections within the system. Vast amount of user generated content is created on social networking sites every day i.e. Facebook, Twitter, Google+. From that here Facebook is kept as main social media source. Facebook uses algorithm called engagement rate algorithm which is used to rank their news feed. Here data are fetch using this algorithm from the Facebook. Here in this research work we are going to implement new algorithm named user ranking algorithm in which ranking of friends will be done based on post on which they do likes, comments and shares. This will be done for each logged in user and further these ranks will be used by company's client for marketing analysis.

Keyword: - Social Network, Social Media, Ranking Methodology, Facebook, User Ranking.

1. INTRODUCTION

Social Media usage has become an essential and important part of day-to-day activities of people. Social Media Mining is the process of representing, analyzing, and extracting actionable patterns from social media data. Social Media gives users an easy-to-use way to communicate and network with each other on an unprecedented scale. Vast amount of user generated content is created on social networking sites every day i.e. Facebook, Twitter, Google+. [6]

The Social Graph in the Internet context is a graph that depicts personal relations of internet users. In short, it is model or representation of a social network, where the word graph has been taken from graph theory to emphasize that rigorous mathematical analysis will be applied as opposed to the relational representation in a social network. [9] The social graph has been referred to as "the global mapping of everybody and how they're related". The term was popularized at the Facebook F8 conference on May 24, 2007, when it was used to explain how the newly introduced Facebook Platform would take advantage of the relationships between individuals to offer a richer online experience. [9] The definition has been expanded to refer to a social graph of all Internet users.

Since explaining the concept of the social graph, Mark Zuckerberg, founder of Facebook, has often touted Facebook's goal of offering the website's social graph to other websites so that a user's relationships can be made aware and put to use on websites outside of Facebook's control. [3] This can be accomplished through the Facebook Open Graph API. The success of Facebook comes down to the concept of the social graph. [9] It draws an edge between people and the people, places, and things people interact with online in computer language, when you "like" something through Facebook, it becomes an edge. The edge is the connection point between you and other people, places, or things. Facebook report web data from approximately 149 million U.S visitor per month. [9]

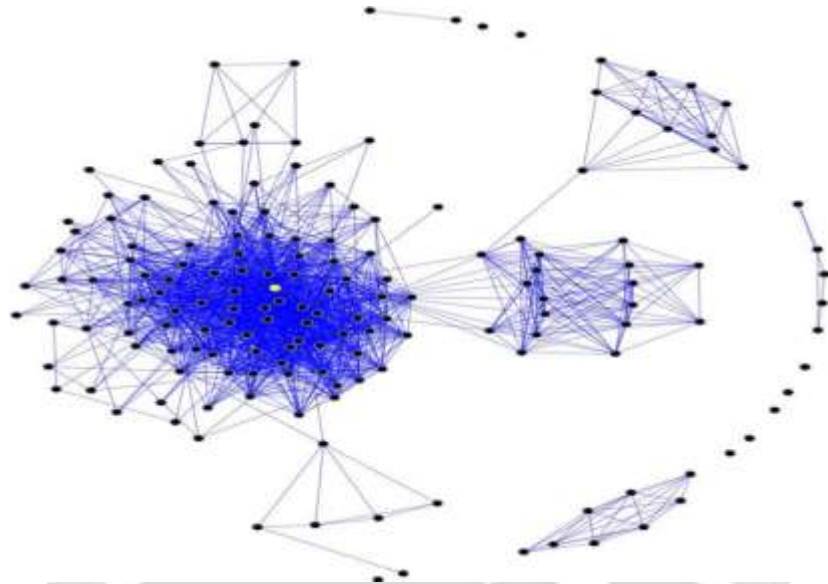


Fig -1: Graph Representation of Node. ^[9]

Facebook uses graph API version 2.5 for fetching data. The Graph API is the primary way to get data in and out of Facebook's platform. It's a low-level HTTP-based API that you can use to query data, post new stories, manage ads, upload photos and a variety of other tasks that an app might need to do. The study aims at building a reliable method for calculating the engagement rate of the Facebook brand pages. Additionally, the study aims to identify the extent to which the moderators post influences the engagement rate of its audience in terms of its content, frequency and the number of fans present for a particular brand page, by analyzing Facebook pages of predominant brands available to audience.

1.1 Social Media Marketing

“Social media marketing refers to the process of gaining traffic or attention through social media sites.” Marketing Land is the sister site to Search Engine Land that covers all facets of internet marketing, including these popular topics within social media marketing:

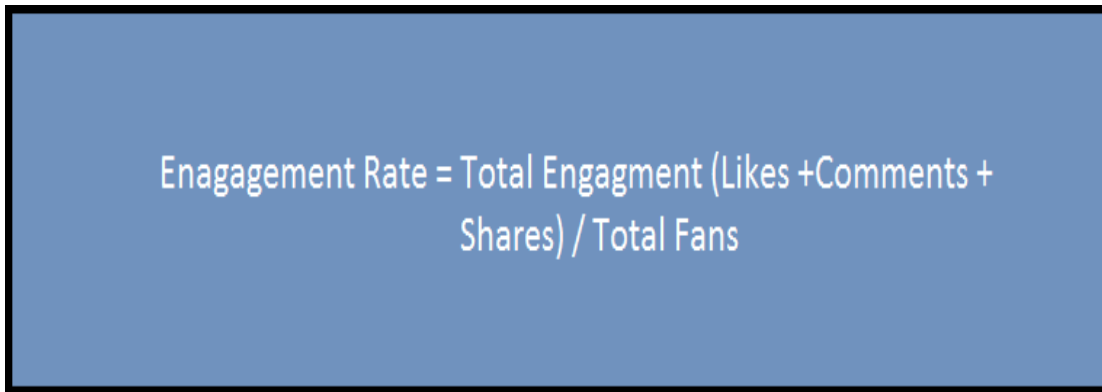
- Facebook
- Instagram
- Twitter
- LinkedIn
- YouTube

From all of them right now more active user is available on Facebook which become the more powerful platform for social media marketing. The continuous growth in digital technologies has resulted in the growth of digital brand management and made it an essential entity for a particular brand's success. It is evident that Social networking sites with its user base of over two billion stands as the most powerful and influential outlet for online branding when compared with other digital channels. Social media marketing (SMM) is a platform where the marketers can give a more humanizing effect (a real person behind the brand pages) as a brand through which they can create a personal connection with the brand audience.

Due to this unique potential, marketers tend to leverage SMM to increase brand loyalty, recognition and to provide richer customer experience. But there are still disagreements on the actual engagement rates of these brand pages and how they can be influenced by the moderator of the page by enhancing the online image of their brands. The study aims at building a reliable method for calculating the engagement rate of the Facebook brand pages. Additionally, the study aims to identify the extent to which the moderators post influences the engagement rate of its audience in terms of its content, frequency and the number of fans present for a particular brand page, by analyzing Facebook pages of predominant brands available to audience. [8]

2. RELATED WORK

Engagement Rate is a metric that social media marketers use to measure a brand’s page effectiveness for engaging their audience. Social marketers use Engagement Rate to compare engagement performance not only on a brand’s post but also across Facebook posts from brands with different audience sizes. Engagement Rate on individual posts is also a valuable metric for comparing the quality of content that you post to your page. It gives you a way to compare engagement between two posts that reached a different number of users.




$$\text{Engagement Rate} = \frac{\text{Total Engagement (Likes + Comments + Shares)}}{\text{Total Fans}}$$

Fig -2: Formula for Page Ranking Engagement

Knowing what share of your audience actually engages with content can indicate the quality of your audience as you grow fans over time. When performing competitive analysis, Engagement Rate allows you to compare engagement on your page with pages that have different audience sizes.

In paper [2] author have proposed Engagement rate method. Engagement means establishing and sustaining relationships, while developing a level of trust that makes people comfortable enough to do business with you. Engagement Rate can be calculated using their friend can interact with user’s posts or make them show up in their Newsfeeds using data like total numbers of likes, comments and share are available in per post of user, and using this data we can find how many people are engage with user’s profile. This method is used in Facebook to know who much user is interacted with that particular page.



$$\text{Average Post Engagement Rate} = \frac{\frac{\text{Likes + Comments + Shares on a given day}}{\text{\# of wall posts made by page on a given day}}}{\text{Total Fans on a given day}} \times 100$$



$$\text{Daily Page Engagement Rate} = \frac{\text{Likes + Comments + Shares on a given day}}{\text{Total Fans on a given day}} \times 100$$

Fig -3: Engagement Rate Formula for Page

In paper [4] author has proposed a Social Media Marketing (SMM) platform. SMM is a platform where the marketers can give a more humanizing effect (a real person behind the brand pages) as a brand through which they can create a personal connection with the brand audience. Due to this unique potential, marketers tend to leverage SMM to increase brand loyalty, recognition and to provide richer customer experience. In the case of online customer engagement in social media platforms is characterized with interactivity of customer with the brand.

3. PROPOSED SYSTEM

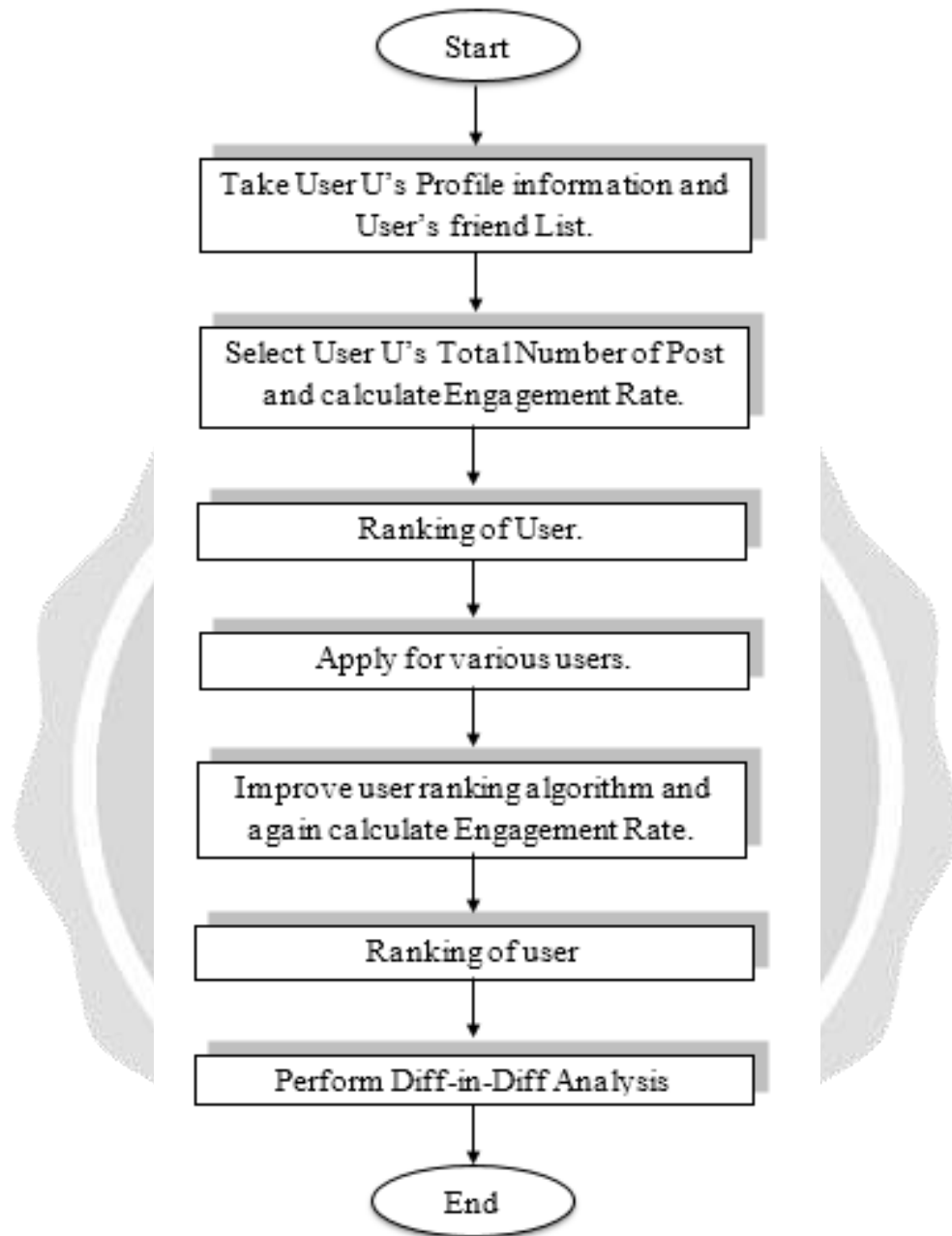


Fig -4: Proposed System

4. PROPOSED SYSTEM ALGORITHM

Step-1: Take User U's Profile information and User's friend List. Find number of friends who like, comment and share the post of user in fixed time duration (like one month, six month).

Step-2: Select User U's Number of Post with in fixed time period and calculate Engagement rate.

Step-3: Based on this ratio Ranking of users will be done. i.e. the one who does maximum likes, comments and share will be given rank 1 and so on

Step-4: This will be applied for many Users.

Step-5: Then after algorithm will be improved.

Step-6: Based on this improved Engagement Rate Ratio Ranking of users will be done.

Step-7: Perform Diff-in-Diff Analysis; Difference in Differences requires data measured at two or more different time periods. Using Diff-in-Diff perform comparison of both Engagement Rate Ratio and Ranking of Users.

5. RESULTS

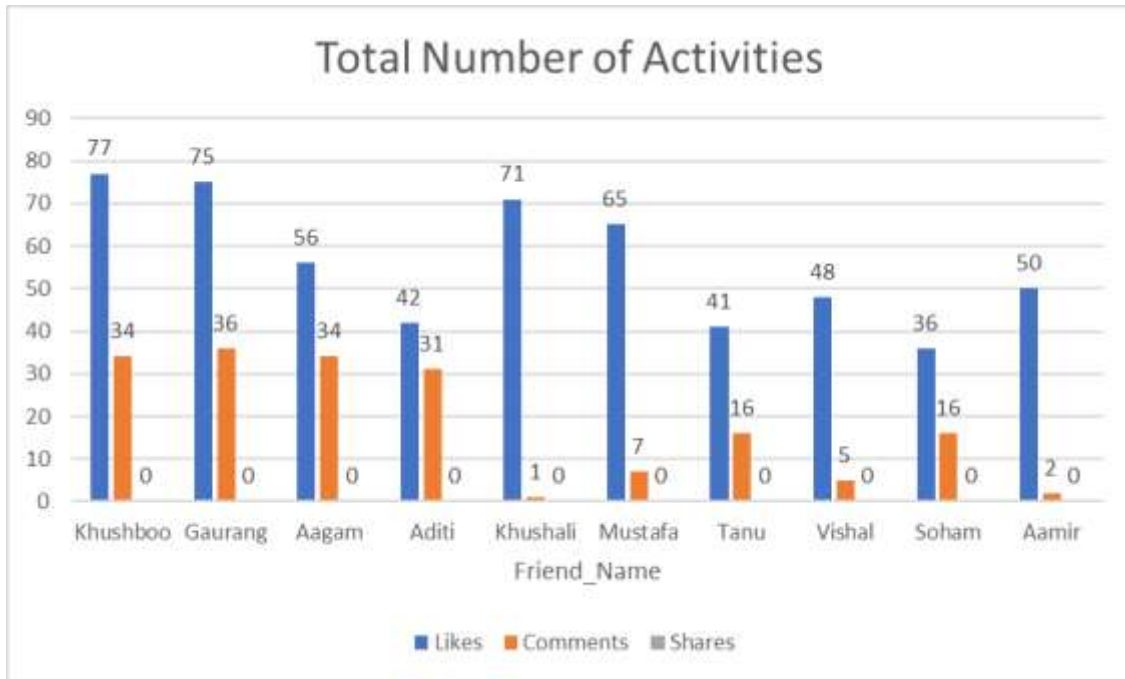


Chart -1: Total no. of Likes, Comments and Shares in Existing System.

Description: Total no of likes, comments and shares done by top 10 friends in Existing System.

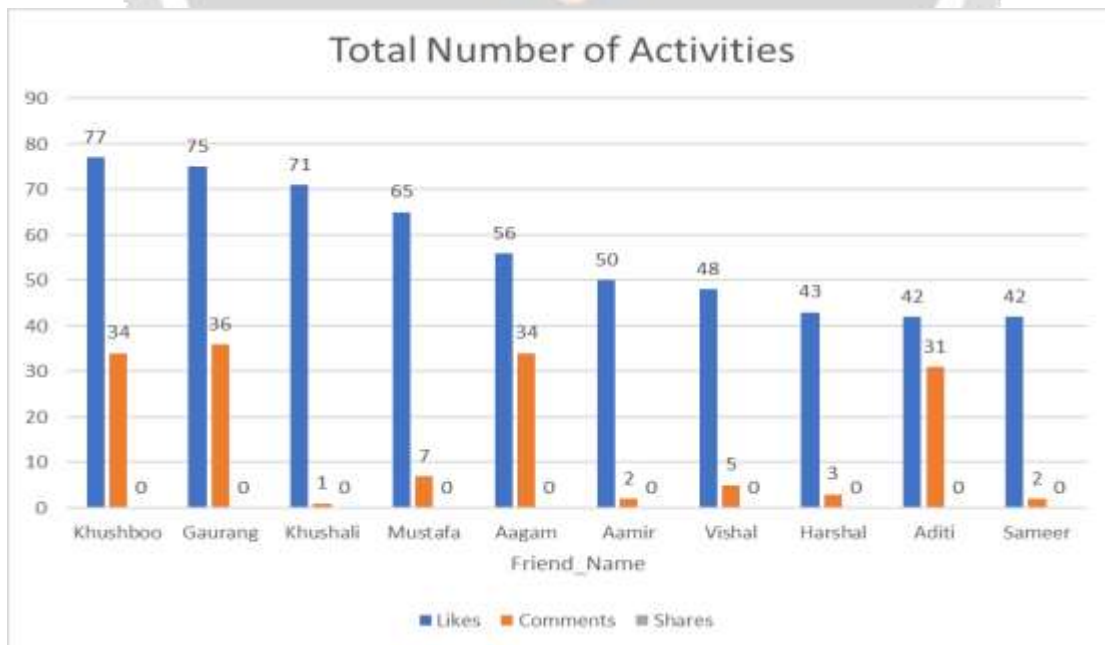


Chart -2: Total no. of Likes, Comments and Shares in Proposed System.

Description: Total no of likes, comments and shares done by top 10 friends in Proposed System.

Proposed System Algorithm provides more accurate n relevant capability of comments and shares for all friend’s activities on single users posts. Existing System does not take into consideration weightage of comments n shares activity by friends in ratio of overall respective activity for the period of time. Result will be dynamic n volatile based on users posts in future.

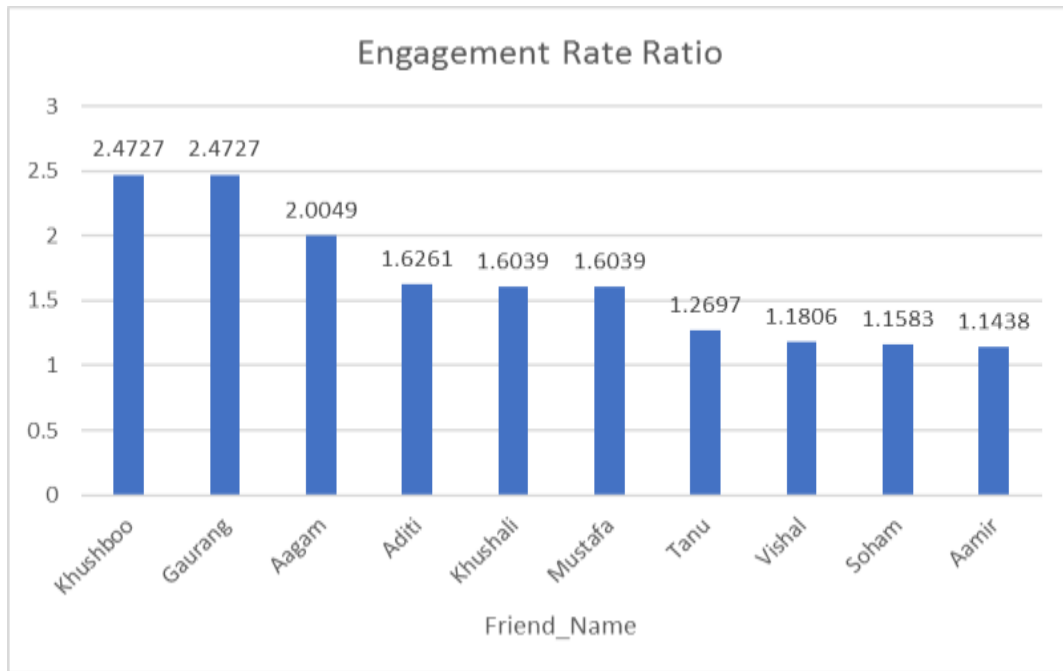


Chart -3: Engagement Rate Ratio in Existing System.

Description: Total Engagement Rate Ratio and Rank of top 10 friends in Existing System.

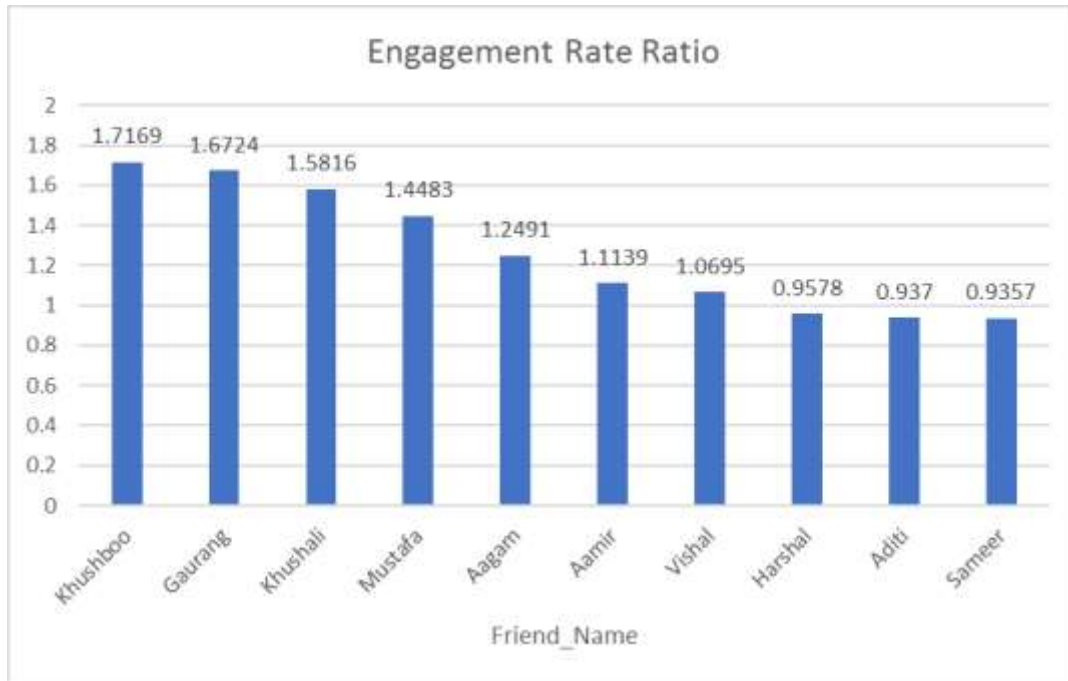


Chart -4: Engagement Rate Ratio in Proposed System.

Description: Total Engagement Rate Ratio and Rank of top 10 friends in Proposed System.

6. CONCLUSION

Social media are interesting both for data collection and also as research object. For instance, Facebook are usually analyzed from social interaction perspectives or professional perspective. The new types of interactions, such as influence, engagement, participation is analyzed for their effects in media. User Engagement Rate Algorithm is Engagement on Facebook accounts for the public ways social audience can interact with your brand posts or make them show up in their Newsfeeds and those of their Facebook friends. Engagement Rate Algorithm is used to calculate person's Reputation within its friends. Also, it gives us ratio from which we can rank the friends for logged in user. This ranking will be helpful for marketing purpose. And also, user will get to know how much their friends are engaged to their posts.

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