

# Fighting Against Professional Trolling and Disinformation: Whether the Display of Users' IP Addresses Works

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**Abstract.** The rising of social media has changed the dynamic of mass communication. The extremely high level of individual empowerment enables social media users to participate in public discussion and contribute to public opinion. Yet, such context also leaves sufficient room for toxic organized trolling. Multiple scholars have identified that authorities worldwide are hiring professional trolls to incite cyberwars to attack competitors by manipulating the public with disinformation. To fight against such a situation, most Chinese social media platforms have begun to show users' IP addresses to expose potential trolls. This study recruited 540 participants and surveyed them to explore and determine the effectiveness of this approach. The result indicated that the IP address display could help social media users identify professional trolls and reduce the clout of disinformation. Being one of the first studies determining the relationship between IP address demonstration and trolling identification, this paper provides a possibility for future research in this area.

**Keywords:** Professional Trolling; Disinformation; Users' IP Address.

## 1. Introduction

### 1.1 The Individual Empowerment and Toxic Trolling on Social Media

Within the past two decades, the rising of social media platforms and digital technologies have dramatically changed the landscape of mass communication. Social media highly relies on user-generated content (UGC) and interactivity among users. Consequently, individuals are greatly empowered to participate in public conversations [1]. Unlike traditional mass media, everyone with access to the internet and electronic devices can express their opinion about controversial topics on social media platforms with the possibility of impacting or altering public opinion [2]. Scholars propose that this internet dynamic has become the dominance framework of contemporary society [3-4].

According to Causey and Howard (2014), in the era of social media, news outlets and practitioners rely on online content shared by individuals to get access to latest news all over the world at instantly [5]. These rising platforms have opened up "vertical channels" of mass communication as well as horizontal channels of interpersonal communication among all users. As a result, social media has a considerable impact on the international development and distribution of power and knowledge as well as the global transmission of information as "a system of interconnected nodes [3-4]."

Nevertheless, the high degree of user empowerment has a vicious downside. Multiple studies have found that trolling, an interpersonal, abusive, and antisocial online behavior, negatively affects constructive social media conversations [6-8]. According to researchers, trolling as an internet phenomenon refers that someone deliberately and provocatively disrupts others by starting arguments by posting or commentating with inflammatory hate messages online [9-10]. It is worth noting that 58% of American social media users who have posted content admitted that they had been involved in malicious online conversations, including posting controversial statements and having aggressive arguments over opinions and facts [9].

According to Pew Research Centre, trolling has already become a form of "online bullying and harassment" [11]. Almost every topic that contains emotional appeals can find a trace of trolling, causing great harm to individuals [12]. It has been found that experiencing trolling communication can have psychological repercussions, particularly negative ones, that are similar to the emotional

situation of facing offline harassment. Consequential mental issues can include depression or anxiety. [2, 8, 13].

### **1.2 Professionalism and Politicization of Trolling**

Yet, what is even more problematic is that practitioners have noticed a new genre of trolling. For example, Donald Trump, the former president of the U.S., is considered trolling politician, liberal arts professors have been long under the online attack of right-wing trolls, and the extreme White supremacists had detectable connections with online trolling communities [14-16]. As Ortiz analyzed (2020), trolling has transformed from an internet subculture to a developing obstacle to politics and even the whole society [17].

Given this, organizations and governments have begun using such a form of online activity as a weapon by hiring professional trolls to “infiltrate, manipulate and control online conversations surrounding their rivals” [18]. Manor (2019) pointed out that authorities worldwide are taking advantage of social media’s highly interactive and accessible mechanism and nature. Practitioners are disseminating misinformation to mislead the public and create division through emotionally-stimulating propaganda with the goal of manipulating public opinion and weakening national development in foreign countries. [19]. For example, it has been proven that Iran and Saudi Arabia once used social media, especially Facebook, to spread rumors or conspiracy theories to twist the facts of relevant political incidents and attack Israel [19-20]. It has also been found that Russia has been hiring propaganda writers to spin and twist the public opinion in Finland by distributing massive misinformation in multiple languages and attack individuals to carry out cyberwars [21].

Even worse, studies have determined that trolling can impact or even alter the dynamic of international relationships and politics. Multiple journalists have reported that Russia has formed a troll farm by employing people to spread disinformation, a deliberately deceptive and misleading subset of misinformation [21-22]. By widely spreading rumors and twisted facts, the troll farm aims to intervene in major public discussions and flood topic-related web spaces to drown constructive comments [23]. As a result, the troll farm has become an operation supporting Russia’s cyberwar and manipulating the presidential election in the U.S. as trolling comments or statements have polarized audiences’ beliefs and profoundly adjusted their interpretation of relevant events [24].

### **1.3 The Limitation of Current Study**

Nevertheless, it is disrupting that current studies regarding professional trolling and disinformation are considerably limited [25]. Most recent studies focus on examining trolls’ psychological situation and the auto-detections of trolling, which are conducted in the area of computer science [2, 25-26]. Very few studies explore the audiences’ cognition, recognition, and perception of professional trolling and determine the relationship between these factors and the impact of disinformation. Yet, practitioners from Facebook, Digital Africa Research Lab, and BuzzFeed News have identified that professional trolls usually have shared physical locations, given how their organization functions [18]. Based on this, since April 2022, most Chinese social media platforms have begun to show all users’ IP addresses based on information obtained from their mobile carriers to fight against professional trolling [27]. This has provided a perfect context and background to study whether showing IP addresses is an influential factor in helping social media users identify and recognize professional trolls, thus reducing the acceptance of twisted facts and restraining the spread of disinformation at the individual level.

## **2. Method**

This study conducted a survey to determine whether the display of IP addresses will impact users’ awareness of professional trolling, identification of paid trolls, and ultimate attitudes towards trolling comments. The questionnaire contained 18 questions. There were ten multiple-answer questions aimed to determine and analyze participants’ habits of using social media. Six questions adopted a 5-

Point Likert Scale to measure participants' attitudes towards the display of IP addresses. One open-ended question was listed to conduct a brief content analysis to measure whether and how IP address demonstration influences participants' habits of using social media and processing information obtained on social media. The online survey was distributed via a WeChat QR code and a WeChat link from August 15, 2022, to August 25, 2022. A total of 540 questionnaires were collected. After removing invalid samples with missing values, completely consistent choices, and response times of less than 2 minutes and more than 10 minutes, the final effective sample size was 403.

### 3. Results

#### 3.1 Analysis of Basic Information

To explore the research questions of this study, the questionnaire surveyed the basic information of the participants, their usage of social media, and the change in their thoughts, attitudes, and behaviors after showing the IP location. Among 403 selected participants, 43.18% were male, and 56.82% were female, resulting in a nearly 4: 5 gender ratio. As for their age distribution, 13.4% of the respondents were under 18 years old, 21.59% were 18-24 years old, 32.01% were 24-35 years old, 15.38% were 35-45 years old, and 17.61% were over 45 years old. Regarding educational background, the majority of respondents have a bachelor's degree or above, among which 36.97% have a bachelor's degree, 11.91% have a graduate degree or above, 21.34% have a junior college degree, and 29.78% have high school degree or below. In this survey, all age groups and educational backgrounds were distributed, which indicated that the collected data covered a wide range and was relatively representative.

As for the number of social media platforms they often use, 66.5% of the respondents said they often use 3-5 social media, 24.57% said they often use two or fewer social media, and 8.93% of the respondents often use more than six social media. A list of various social platforms was mentioned. Given the different positions and functions of mentioned social media, the respondents' social media usage habits demonstrated considerable diversity in terms of social purpose and forms.

#### 3.2 Analysis of Participants' Habits of Social Media usage

When answering the question about the social media platforms they would use daily, 95.29% of the respondents mentioned Weibo, 66.5% said they use WeChat, 59.31% said they use TikTok and similar short video platforms, 56.08% said they use Red, a life-style sharing platform, and 54.59% used Toutiao news. In addition, a certain proportion of participants said that they would use QQ, Zhihu, Douban, and other social media, which indicates that the survey respondents have extensive use of social platforms and can reflect the usage habits of different platforms' users.

The survey collects the average time respondents spend daily on social media to examine participants' reliance and usage of social media. According to the survey results, 50.37% of respondents said they spend 1-3 hours on social media every day, 20.84% of respondents said they spend 3-6 hours to navigate social media platforms daily, and 11.17% of the participants said they spend more than 6 hours on social media. The collected data indicated that most participants were heavy social media users whose attitudes and behaviors are under the bigger influence of platforms' policy changes.

61.29% of participants noticed that the platforms have begun to show users' IP location, with 29.78% realizing most Chinese social media platforms have made the same adjustment. This result also demonstrated that surviving individuals are sensitive to social media mechanisms and atmospheres. In using social media, users perceive the changes in platform functions differently due to their different browsing habits. As for how users know the IP address displayed on social media, 28.78% of the respondents said they found it by themselves, 20.84% said they found it by other users, and 36.72% of the respondents said they knew it by watching the news. People know information through various channels.

To learn users’ purposes for using social media, 71.98% of respondents used social media to contact friends, 68.49% of participants identified their primary purpose of using social media was entertainment, 62.03% of respondents used social media to gather news and relent comments, 63.03% of the respondents relied on social media for shopping information, and 68.49% of the respondents chose social media to follow their favorite celebrities and TV shows. Such a result indicates that collected samples are relatively non-homogenous, reducing the bias that might be caused during the sample collection process.

Social media empowerment gives individuals massive opportunities to participate in concerned topics and have conversations with others. The survey results show that 68.49% of the respondents said they would discuss controversial issues, and 62.03% said they would do so when they had free time. 42.93% of the respondents refused to participate, and the vast majority said they would only participate in discussions related to concerning topics.

To understand the influencing factors of social media users’ judgment on IP locations, 85.36% of respondents said that the location of the stakeholders involved in events would affect their judgment on IP locations, and 86.85% of respondents said that the location of where a particular event happened would affect their judgment on IP addresses, 82.88% of the respondents said that countries/regions related to political topics would have an impact on their judgments, and 96.03% of the respondents said that countries or regions that having tense political relations with China would have an impact on their judgments.

### 3.3 Reliability analysis

**Table 1.** The Klonbach Alpha Value

	The Scaling Average after the Item is Deleted	The Scaling Variance after Deleting the Item	Aggregate Correlation (after correcting)	Squared Multiple Correlation	Clone Bach Alpha after deleting the item	The overall Cronbach Alpha
Q11. Do comments on social media influence or change your opinion before the IP address is displayed on the platform?	17.88	20.681	0.891	0.795	0.775	
Q12. Do comments on social media influence or change your opinion after the IP address is displayed on the platform?	18.1	22.298	0.574	0.411	0.833	
Q13. Do you think that there are professional trolls who participate in the discussion about trendy topics on social media before the IP address is displayed on the platform?	18.03	22.437	0.611	0.439	0.826	
Q14. Do you think professional trolls participate in the discussion about trendy topics on social media after the IP address is displayed on the platform?	18.03	23.059	0.547	0.402	0.838	0.851
Q15. Do you determine some users are trolls based on the IP address after the IP address is displayed on the platform?	18.14	21.821	0.609	0.438	0.827	
Q16. Do you consider the content posted by some users disinformation to confuse public opinion based on the IP address displayed on the platform?	18.07	22.575	0.583	0.443	0.831	

The overall scale in this study had a Klonbach Alpha score of 0.851 (higher than 0.7), and the reliability coefficient ranged from 0 to 1. The dependability increased as the value approached 1. The

reliability coefficients after eliminating items are all more than 0.7, as shown in the accompanying table, and they are all lower than the overall reliability coefficient of the relevant dimension for each item. As a result, it is believed that the scale's measuring data is accurate and trustworthy.

### 3.4 Validity Analysis

The significance of the Bartlett's sphericity test and KMO coefficient are required for the validity test. The KMO coefficient has a value between 0 and 1, and the closer it is to 1, the higher the questionnaire's construct validity is. The KMO test's coefficient of 0.811 indicates that the questionnaire's overall validity is high, according to the results of the overall validity analysis.

**Table 2.** KMO and Bartlett's test

KMO Sampling Appropriateness Quantity		0.811
Bartlett's Test of Sphericity	The Approximate Chi-square	1097.395
	Degree of Freedom	15
	Significant	.000

### 3.5 Analysis of Variance

To better determine and capture the changes in users' perception of social media IP addresses before and after the display, the differences of six scale questions in the questionnaire were analyzed, and the P value ( $P < .001$ ) of each item was analyzed by one-sample t-value test, which indicates that all the items in the scale can measure the attitude of users before and after the display of IP addresses on social media. According to the score of respondents, the higher the score, the greater the influence of the comments on social media on respondents. In this survey, the average score is above 3.511 (the score of each question is 1-5, from not at all to not at all), indicating that behavior on social media has a significant impact on platform users.

**Table 3.** T-Test

	t	DF	Sig. (Two-tailed)	Mean Deviation	Difference 95% Confidence Interval	
					The Lower Limit	The Upper Limit
Q11. Do comments on social media influence or change your opinion before the IP address is displayed on the platform?	68.042	402	.000	3.774	3.67	3.88
Q12. Do comments on social media influence or change your opinion after the IP address is displayed on the platform?	55.225	402	.000	3.546	3.42	3.67
Q13. Do you think that there are professional trolls who participate in the discussion about trendy topics on social media before the IP address is displayed on the platform?	59.738	402	.000	3.615	3.5	3.73
Q14. Do you think professional trolls participate in the discussion about trendy topics on social media after the IP address is displayed on the platform?	59.643	402	.000	3.62	3.5	3.74
Q15. Do you determine some users are trolls based on the IP address after the IP address is displayed on the platform?	54.009	402	.000	3.511	3.38	3.64
Q16. Do you consider the content posted by some users disinformation to confuse public opinion based on the IP address displayed on the platform?	58.204	402	.000	3.583	3.46	3.7

Social media posts are less influential to users when the IP address is displayed than when the IP address is NOT displayed ( $3.546 < 3.774$ ). Even though the display of user IP addresses on social media has no significant impact on users' perception of trolling in controversial discussions, users will tend to judge the content published by users with specific IP locations as disinformation aiming to confuse the public. Therefore, it can be analyzed that the display of IP addresses can increase users' sensitivity and awareness of disinformation posted by trolls, thus limiting its spread.

#### 4. Discussion

As far as the author knows, this study is one of the first to explore the relationship between the IP address demonstration and the trolling identification from the user perspective. Collected data has indicated that most participants are active Weibo users who spend more than one hour keeping abreast of current social or political events and interacting with friends. This confirmed the model proposed by Wang (2013) that Weibo is now the primary platform that reflects the outbreak of intense public sentiment or debate in China, which makes this platform the main target of trolls [28]. NO distinct improvement was identified in users' awareness of trolling after showing the IP address since most respondents were aware of professional trolls before the IP address demonstration. Yet, IP address display is a factor that most participants would pay attention to when using social media, which implies that they would consider this factor when processing information obtained from social media platforms.

Furthermore, the study's findings have demonstrated that the display of IP addresses can significantly help users identify trolls and filter disinformation as notable changes in users' attitudes towards online comments before and after showing the IP address were determined. According to the survey, participants use IP addresses to evaluate relevant content and assess its credibility. Once the respondents perceive potential trolling communication, they will identify that content as disinformation and relevant accounts as trolls. Then, they will process those posts or comments more critically compared to those without seeing IP addresses. As a result, they will NOT change their interpretations, beliefs, or thoughts as easily as when IP addresses are not visible. In other words, IP address display can impact users' perceived credibility of information they are exposed to, thus influencing the spread, reach, and outcome of disinformation.

Nevertheless, as discussed before, such an IP-address-based identification is relatively subjective. According to the collected data, most participants classify IP-address according to the stakeholder and political factors. That is to say, if one's IP addresses are from stakeholders' areas or China's political competitors, such as the U.S., participants are more likely to consider these accounts trolls. Moreover, most respondents only follow the events they are concerned about, which means that their participation in public discussion is also relatively subjective. As Manor (2019) stated, widely used social platforms and networks facilitate communication among people with similar opinions, which easily strengthens the homogenization, radicalization, and extrema of extremist groups, resulting in a negative consequence of the echo chamber effect [19]. This further supports that users' identification of trolls based on IP address can be potentially biased.

Such subjective identification has also confirmed Fukuyama's theory of identity politics in 2018 [29]. According to him, one's "demands of identity direct the world's politics." That is to say, individuals' desire and passion for seeking equalities or privileges have caused great shock to the rational logic cultivated by traditional political studies. Pang (2019) has further emphasized that the development of technologies and the rising of social media have accelerated the fragmentation of identity politics. Under disinformation's negative impact, social media users tend to rely on their perceptions, feelings, and emotions instead of facts, thus, leaving professional trolls to take advantage of such a collective political passion (and blindness) [30]. As determined in this study, social media users tend to assess others' IP addresses based on their cognition. For example, in the survey, users with overseas IP addresses stated that they considered users based in mainland China populists. In contrast, mainland users tend to aggressively interact with overseas users as they consider accounts

with external IP addresses trolling accounts controlled by political opponents, such as the Taiwan government. Therefore, by leveraging the studies of Fukuyama and Pang and the result of this research, concerned scholars can further explore whether IP address demonstration will boost one's awareness of identity politics and how such a display will alter individuals' political perceptions.

Moreover, Jamieson (2018) mentioned in her book that persuasive appeal is a vital prerequisite of trolling [24]. Professional trolls leverage multiple communication skills, mostly framing and agenda-setting, to make their target audiences resonate with their advocacies. For example, the Russians selected concerned voters based on their Facebook posts, classified them, and delivered relevant paid ads accordingly. By precisely reaching out, the Russians demonstrated shared common values to convince the target audience [24]. Yet, given states in America have political identifications, such as LA is blue while FL is red, IP addresses might be another vital persuasive factor in political communication. It is worth exploring whether IP address demonstration will influence American users' trolling identification to extend Jamieson's findings further.

## 5. Conclusion

This research has confirmed that the rising of social media has fundamentally changed the landscape and dynamic of mass communication as individuals tend to rely on social media to obtain news and connect with friends. Social media has provided a highly accessible and interactive platform for all users to participate in public discussion by expressing their views on a particular social issue or interacting with others. Under such a context, the question arises as to what could be done to reduce the noise created by trolls. The study has proven that the IP address display can be a powerful tool to help users identify trolling behaviors and resist the negative influences of disinformation. Social media users can use IP addresses to evaluate the authenticity and credibility of certain content or accounts to estimate whether professional trolls are involved. In the future, tech companies and authorities in other countries can consider displaying IP addresses on social media to educate the public and reduce the spread and influence of disinformation at the individual level.

Yet, this research has its limitation as well. As mentioned, individuals' identification based on IP address might be biased. Currently, data regarding more specific factors that influence users' identification of professional trolls are needed. Other research methods, such as focus groups, and in-depth interviews, need to be adopted and conducted to gather more primary data. The results can help explore the relationship between the IP address display and restricting trolling more systematically so that researchers and practitioners can better understand the behavioral model of users that cope with trolls and more effectively leverage the display of IP addresses to break the echo chamber and reach the target audiences.

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