

The diffusion of fake news through the "middle media" - contaminated online sphere in Japan

Hiroataka Kawashima
Graduate School of Sociology,
Hosei University
2-17-1 Fujimi, Chiyoda-ku,
Tokyo, Japan
kwsahr@gmail.com

Hiroyuki Fujishiro
Faculty of Social Sciences,
Hosei University
4342 Aihara-machi, Machida-shi,
Tokyo, Japan
fujishiro@hosei.ac.jp

Abstract

The purpose of our research is to determine how fake news is disseminated on the Japanese portion of the internet. We adopted the national election held in October 2017 as a case. We found a fake news on an opposition politician was diffused through some intermediate media, so called "Middle Media" in Japan, and these media had the key role in hindering the distribution of correcting information. Our finding suggests that if middle media have a large presence in your country, the effect of correcting information, currently regarded as a solution, will decrease as a result.

1 Introduction

To elucidate the viral structure of fake news is an emergent issue. Triggered by the U.S. presidential election, the effects of fake news are being reported in a number of countries. Related to the U.S. presidential election in 2016, social media have been mentioned as a field of intervention from abroad. This maneuvering is named "Russia gate". On 2017, October 31st and November 1st, Facebook, Google and Twitter invited by Congress to answer on Russian use of their platform in campaign ([Lap17]). Facebook deposed that as many as 126 million people have been possibly

exposed to 80,000 posts from a Russian propaganda group during two years at election. Google deposed that they had banned 18 YouTube accounts identified as the Russian propaganda group which had uploaded a total of 1,108 videos. Twitter also deposed that their statistics on Russia's organic reach on twitter in two and a half months last year, that is 1.4 million tweets and 288 million impressions by Russian bot accounts. It has become increasingly difficult for the public to discern facts from fiction.

Aside from practical struggle by journalists, academic approaches have been also reported. [All17], gathered a database of fake news articles that circulated in the three months before the U.S. presidential election in 2016. The authors also conducted an online survey to acquire demographics, political affiliation, news consumption and whether participant can recall some specific news headline including fake news. Based on regression model, they show some polarized beliefs like "People believe what they want to believe" and Bayesian model. [Dar17], collected top 50 most retweeted tweets of each day from September 1st, 2016 to November 8th, 2016 (Election Day). They categorized those tweets based on whether the tweet is supporting or attacking and that is whether neutral or irrelevant to either candidate. They found the Trump campaign was more attacking and Trump supporters were more likely to share links from websites which are of questionable credibility than Clinton supporters. [Dav16], had developed a web service to evaluate whether each twitter account is human-controlled or an automated bot. [Sha17] had based on that system. They focused on the role of social bots in the spread of misinformation and found the active role of social bots in the spread of misinformation. [Zub18] distinguished two types of rumors on social media, which are long-standing rumors and newly emerging rumors.

Copyright © 2019 for the individual papers by the papers' authors. Copying permitted for private and academic purposes. This volume is published and copyrighted by its editors.

In: A. Aker, D. Albakour, A. Barrón-Cedeño, S. Dori-Hacohen, M. Martinez, J. Stray, S. Tippmann (eds.): Proceedings of the NewsIR'19 Workshop at SIGIR, Paris, France, 25-July-2019, published at <http://ceur-ws.org>

Based on this demarcation they resolve the solutions into four component; rumor detection, rumor tracking, rumor stance classification, and rumor veracity classification.

Meanwhile, in Japan, little has been reported on the context of fake news though viral structure on misinformation and disinformation in natural disaster situations has been big theme based on Japanese experiences of an earthquake and nuclear accidents at 2011. The Japanese national election was held in October 2017. We targeted this national election as a case and collected questionable claims about candidates and parties on social media during the elections. In this research, we empirically show the role of intermediate media between social media and mass media in the viral structure of fake news though the case study on the national election in Japan.

2 Middle Media Model

The structure of media is influenced to no small extent by the country and the society. In Japanese case, there are a lot of intermediates between mass media and personal media such as news aggregators and content curators. Here, examples of mass media are TVs or portal sites and examples of personal media are social media, personal blogs or bulletin boards. [Fuj06] called these intermediates "middle media" in the Japanese context. Personal media are assembled and summarized by middle media. Middle media provide the content to mass media and mass media deliver the news made of the contents from middle media to public. Although the role of middle media has been recognized and pronounced in the field of Japanese journalism, that has remained at only insight without data from concrete case studies. In this research we adopt this middle media model and define them as media that fulfill the existing gap between mass and personal media, to clarify the viral structure of fake news and try to connect this conceptual model with the data from focused case of the Japanese national election. We classify each media related to the focused fake news into mass media, middle media or personal media based on the definition. This classification and tracking fake news during the election gives us factual evidences on the role of middle media.

3 Research Question

Based on these social background and middle media model on Japanese context, we fixed a research questions on the role of middle media. RQ1, the role on the distribution: middle media functions as the intermediate not only between the mass media and the public (personal media) but also between the personal media and the mass media in distributing questionable

claims. RQ2, the role on the context: middle media add or change the context of questionable claims through the diffusion process.

4 Data Collection

Finally, the dataset in this research is composed of the following four types of data. These four data are related to a fake news on an opposition politician, which diffused through mass, middle and personal media in the campaign.

- A. 566 tweets which mention that fake news.
- B. 126 unique web pages (URLs) linked from A.
- C. 148 tweets which mention the correcting information.
- D. 25 unique web pages (URLs) linked from C.

Here we describe the collecting protocol of data collection and related mother project. As the first step, questionable claims related to the election had been collected during the campaign, which was administered as a temporal project by Japan Center of Education for Journalist (JCEJ). We joined this online verification project. Collaborating journalists from a total of 19 media companies (newspapers, TV broadcasts and web media) verified the questionable claims. The project published five debunks related to the campaign. Of the five debunks, we specifically looked into fake news related to an opposition politician. The politician is Kiyomi Tsujimoto, an incumbent candidate from opposition first party (at the election). She had already won six national elections (and as a result, achieved seventh at this election). She has been elected many times, which indicate her presence and news hook. Her twitter account (@tsujimotokiyomi) has stopped tweeting from July 30th, 2015 and the number of followers is 19,240 (as of October, 2017), that is relatively small as an active Diet member. Additionally, Public Offices Election Act in Japan prohibits all candidates to send their message through social media. In other words, she had difficulty in responding to questionable claims immediately during the election. The content of the fake news is described below. It was published on September 29th, 2017 by the middle media named J-CAST News (<https://www.j-cast.com>). The title of the article is "Kiyomi Tsujimoto has fallen into 'insanity', it's been coming up a lot on internet. She remained silent despite questions by reporters. Suddenly, she said something ambiguous." After this claim was distributed, J-CAST News publish the correcting information at October 4th. Both the article (fake news) and its correcting

information are target of this research to track the viral paths and features. As the second step of data collection, we searched related tweets based on the keyword "Tsujiimoto" and/or words within the article from September 29th to November 14th. After collecting related tweets, human coders judged whether each tweet is about the original fake news or its correcting information. Here we obtained A. 566 tweets which mention that fake news and C. 148 tweets which mention the correcting information. As the third step of data collection, we extracted URLs and its linked web pages from those tweets. After deduplications, we also reextracted another URL linked from those web pages to another web media. Here we obtained B. 126 unique web pages (URLs) linked from A and D. 25 unique web pages (URLs) linked from C.

5 Results

Table 1 shows a breakdown of mass, middle, and personal media in our data. "Number of sites" refers to the unique number of sites linked to collected tweets related to the fake news in question. "Average of numbers of tweets" means the average number of tweets in each mentioned media. "S.D. of numbers of tweets" means the standard deviation of tweets of each mentioned media.

Figure 1 shows the distributions of each media on Twitter related to the fake news, or its correcting information. Circles represent the media content linked in tweets, and the size of the circles represent the number of tweets. The horizontal axis shows the time, and the vertical axis in each media type demonstrates the order of appearance.

Figure 2 shows the diffusion of the fake news, and its correcting information across three media types. The circle indicates the total number of tweets based on summation, by websites which mentioned the previous website in that sequence, and circle size indicates the number of tweets.

Figure 3 shows the changes in the fake news headline through the diffusion process. Horizontal axis indicates the time series, the upper block shows the transition of fake news, and lower block shows the transition of correcting information.

6 Discussion

First, we look at RQ1, the distribution role: middle media functions as the intermediate not only between the mass media and the public (personal media) but also between the personal media and the mass media in distributing questionable claims. We can see in Table 1 that the correcting information was distributed less than the original fake news. In addition, Figure 1

shows another information. To see horizontal (time series) distribution, once happening the fake news from middle media or original tweet which failed the seed of fake news, the news is distributed to other middle media, mass media and personal media in relatively short term. However, this is different for its correcting information. The diffusion of correcting information is less, not only in amount but also in velocity. Figure 2 gives us the path of distribution, and quantitative information. It indicates that the original fake news content diffused through middle media, and once the amplification by middle media reached mass media, middle media picked the topic up again, as the article from mass media (the upper block). On the other hand, middle media did not pick the correcting information in terms of the amount and velocity (the lower block). As a result, this asymmetrical property promotes the diffusion of fake news, and inhibits the transfer of correcting information. We can summarize two findings from the discussion on RQ1. Middle media have an active role on the distribution of fake news, mediating fast and extensively between mass and personal media. Also, middle media have a passive role on hindering the distribution of correcting information by not transmitting it as much as the original fake news.

Second, we review RQ2, the context role: middle media add or change the context of uncertain claims through the diffusion process. For RQ2, we show the transition of the news title in Figure 3. Based on our survey, the first seed of this fake news was determined as a TV news video, broadcast on September 28th. In that video, Kiyomi Tsujimoto left the press interview with negative comments. When the news program was aired, a tweet mentioning the interview was posted (A in Figure 3). The tweet was caught by a tweet curation site (seikeidouga.blog.jp, B in Figure 3). At that time, the tweet curation site (middle media) gave the story a headline "Kiyomi Tsujimoto has gone 'insane'." Another middle media, J-CAST News, caught this topic, and published their article with the title, "Kiyomi Tsujimoto has gone 'insane'; it's gone viral. She remained silent at the reporter's question. Suddenly, she said something ambiguous." (C in Figure 3). The part of the title, "it's gone viral" indicates a feature of middle media. Through this path: tweet, curated tweets, middle media article, the context "It's gone viral on the internet that Kiyomi Tsujimoto has gone 'insane'" was added up. After J-CAST News, each middle media made their own article, with their own headlines. The title of the news has repeatedly changed (D in Figure 3). J-CAST News is a middle media, which delivers to Yahoo! News. Yahoo! News is one of a largest portal sites in Japan (i.e. Yahoo! News is in mass media.) The tipping point of diffusion was when Yahoo! News and the other portal sites

Table 1: Statistics on mass, middle, and personal media websites.

		Mass	Middle	Personal
Fake news	Number of sites	3	111	12
	Ave. of number of tweets	56.3	3.1	2.5
	S.D. of number of tweets	40.1	7.4	3.3
Correcting claims	Number of sites	2	17	6
	Ave. of number of tweets	3.0	2.6	14.8
	S.D. of number of tweets	1.0	4.4	20.1

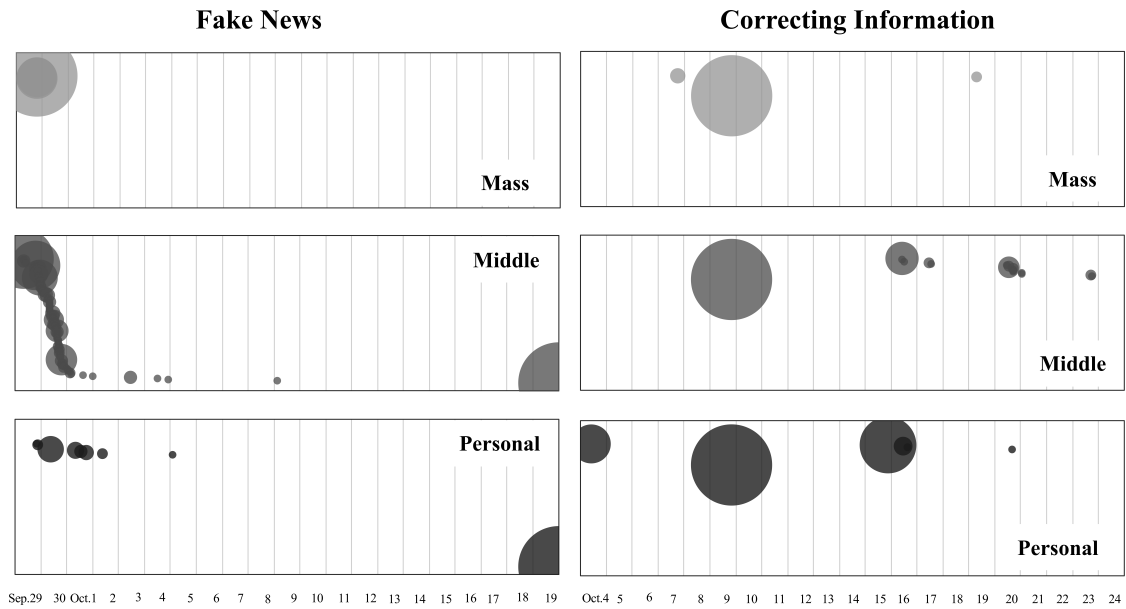


Figure 1: Temporal distributions of each media related to the fake news in focus, or its correcting information.

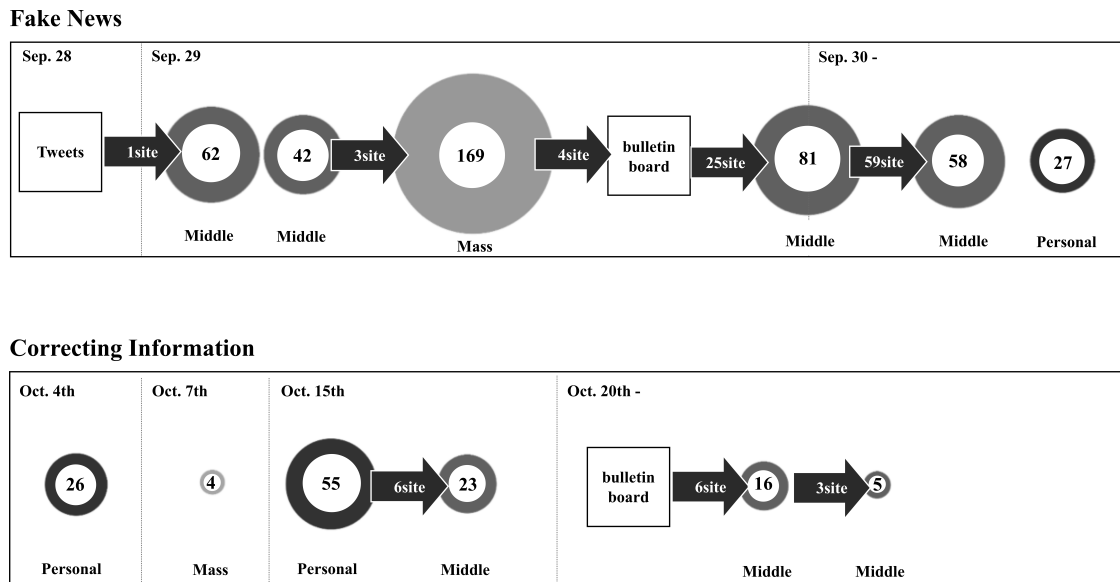


Figure 2: Diffusions of the fake news in focus, and its correcting information across three media types.

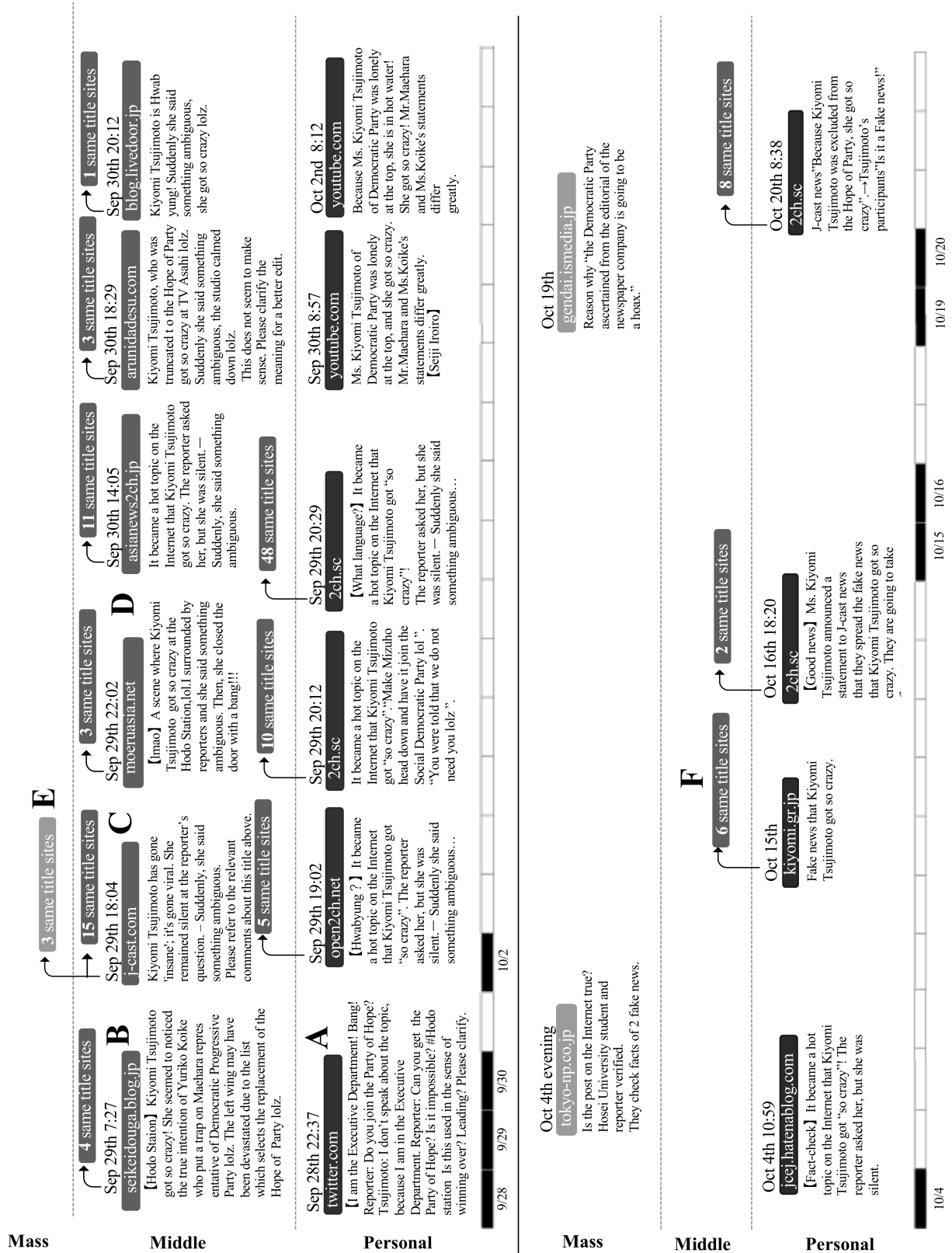


Figure 3: Changes in the fake news headline through the diffusion process.

published the article from J-CAST News (E in Figure 3).

On the other hand, the changes in correcting information exhibited a different appearance. The point of origin was an article on JCEJ blog that posted the result of fact-checking. After publication by JCEJ, a mass media website introduced the the debunk by JCEJ. However, the mass media article (Tokyo Shimbun, <http://www.tokyo-np.co.jp>) was focused more on the activity of fact-checking rather than the result of fact-checking. This article had not been picked up by any middle media. Subsequently, Kiyomi Tsujimoto published an official statement on her website. Some middle media organizations picked up this statement (F in Figure 3), but no article on middle media made it to mass media. During these transmissions, middle media modified the title of the article. One middle media organization introduced the correcting claim, but the title and contents were focused on the conflict between Kiyomi Tsujimoto and J-CAST News (F in Figure 3). Here, we found an additional qualitative role of the middle media in changing the context by adding or changing the headline of claims of both original fake news and its correcting information.

7 Limitations and Future Works

Although our results have consistency with research questions and their background model, there are three limitations and corresponding future works. First, the number of cases is not enough because this research is one of the first attempts to elucidate the viral structure of fake news in Japan related to political events such as elections. Future research should consider a significant sample size of fake news, not just one. The samples will provide the classification on both the type of generation status and the type of structural paths. Additionally, the correlations will progress to clarify the structure of fake news virality. Second, we do not know who disseminated fake news on social media, because the focus of this research is categorizing related media into mass, middle, or personal. In future works, we should analyze each personal media, especially Twitter and Facebook accounts. If network and public profiles are linked to fake news, clustering the layer of transmitters can be clarified. Third, our model of layered media remains a matter of sophistication. The interface between mass and middle media, and between personal and middle media are possible feature amount for identifications.

8 Conclusion

In this paper, we showed the roles of middle media in the structure of fake news virality in the Japanese media ecosystem. Middle media has three roles. First,

middle media have an active role on the distribution of fake news as the fast and extensive mediator, and functionally fulfill the existing gap between mass and personal media. Second, middle media have a passive role on hindering the distribution of correcting information by not transmitting correcting information, as much as it does original fake news. Third, middle media has a qualitative role in changing the context, by adding or changing the title of claims of both the original fake news and its correcting information. Our findings suggest that if middle media have a large presence in your country, the effect of correcting information, currently regarded as a solution, will decrease as a result.

Acknowledgements

The authors are grateful to Rino Yoshii for supporting data collection and discussion. This work was supported by JSPS KAKENHI Grant Number JP18K11997.

References

- [Lap17] I. Lapowsky. *What Congress should ask tech executives about Russia*, <https://www.wired.com/story/what-congress-should-ask-tech-executives-about-russia/> (31 October 2017).
- [All17] H. Allcott and M. Gentzkow. Social Media and Fake News in the 2016 Election. *Journal of Economic Perspectives*, 31–2: 211–236, 2017.
- [Dar17] K. Darwish, W. Magdy and T. Zanoouda. Trump vs. Hillary: What Went Viral During the 2016 US Presidential Election. *Proceedings of the International Conference on Social Informatics*, 143–161, 2017.
- [Dav16] C. A. Davis, O. Varol, E. Ferrara and A. Flammini. BotOrNot: A System to Evaluate Social Bots. *Proceedings of the 25th International Conference Companion on World Wide Web*, 273–274, 2016
- [Sha17] C. Shao, G. L. Ciampaglia, O. Varol, A. Flammini and F. Menczer. The spread of low-credibility content by social bots. *Nature Communications*, 9(4), 2018
- [Zub18] A. Zubiaga, A. Aker, K. Bontcheva, M. Liakata and R. Procter. Detection and Resolution of Rumours in Social Media: A Survey. *ACM Computing Surveys*, 51(2), 2018
- [Fuj06] H. Fujishiro. *'Middle Media' and 'Media Inflation' [published in Japanese]*, <http://d.hatena.ne.jp/gatonews/20061203/1165162065>, (3 December 2006)