

Theory of Search Actions on the Internet using Google Trend

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Nowadays, search actions on the internet corresponds to intention of people in society. There are many researches using search action data as typical data of intention of persons. However, in order to investigate the effects of mass media and social media to search actions are very interesting and significant. For this investigation, the time series analysis is important. Though it is possible to investigate the data in time series using the regression analysis, sociophysics approach is better to analyze time series data.

In general, search actions are affected by mass media information, personal communications and surrounding atmosphere in society. Moreover, information on social media like blog, Twitter, Facebook, Instagram, YouTube encourages people to conduct searches using the Internet. In this paper, we present a new mathematical model to explain search action of people affected by mass media, personal communications, social media and surrounding atmosphere in society via sociophysics approach.

We develop a new theory based on the mathematical model for hit phenomenon [1,2] where counts of daily posting via Twitter or blog can be calculated using sociophysics equation under the influence of mass media and its own social media. In the figure, we show the calculation of our new theory compared with the observed data of Google Trend for the Japanese film “Your Name.”. In this calculation, the blog positing, retweets, advertisement on mass media are included as “external forces” for the search action of people on “Your Name.”. Calculation agrees very well with the observed Google Trend. From this analysis, we found that the blog is far effective than Twitter on this case.

[1] Ishii A, Arakaki H, Matsuda N, Umemura S, Urushidani T, Yamagata N and Yoshida N, "The 'hit' phenomenon: a mathematical model of human dynamics interactions as a stochastic process", {¥sl New Journal of Physics} 14 (2012) 063018

[2] Ishii A, "Analysis and Predictions of Social Phenomena via social media using Social Physics method", INFORMATION-An International Interdisciplinary Journal - ISSN 1343-4500, 2017, in press : arXiv:1706.05597 [physics.soc-ph]

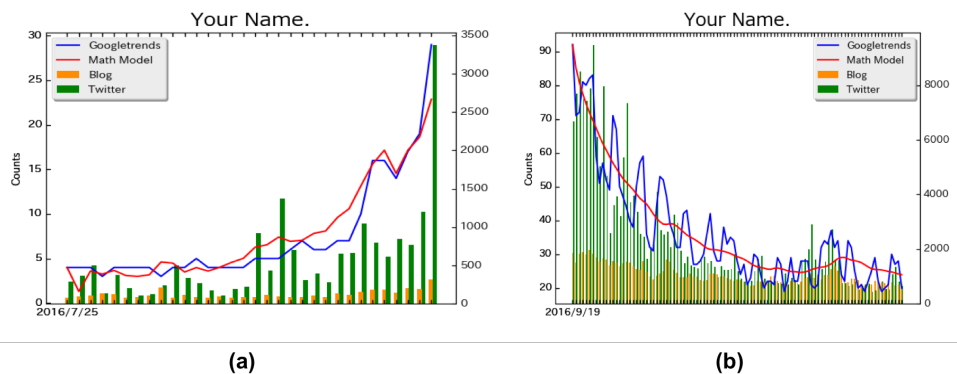


Fig.1 Calculation of the present theory and observed Google Trend for the film “Your Name.”. (a) is before (b) is after the open day.