

The Multi agent based Information Diffusion Model for False RumorDiffusion Analysis

Satoshi Kurihara
Graduate School of
Information Systems
The University of
Electro-Communications
1-5-1, Chofugaoka, Chofu,
Tokyo 182-8585 JAPAN
kuri@is.uec.ac.jp

ABSTRACT

Twitter is a famous social networking service and has received attention recently. Twitter user have increased rapidly, and many users exchange information. When the East Japan great earthquake disaster occurred on March 11, 2011, many people could obtain important information from social networking service. Although twitter also played the important role a false rumor diffusion was pointed out. So, in this talk, I would like to focus on the false rumor diffusion phenomena, and introduce about our multi agent information diffusion model based on SIR model. And I would like to discuss about more rapid correction-tweet diffusion methodology.

Categories and Subject Descriptors

H.4 [Information Systems Applications]: Miscellaneous

Keywords

Twitter, Information diffusion, Multi-Agent

1. INTRODUCTION

During 2011 East Japan Great Earthquake Disaster, we used Twitter to get refuge and rescue information. Some television stations and local governments actively provided information to people via Twitter. It is conceivable that Twitter will become the most important information source. However, we sometimes may receive false rumors on Twitter, which could cause problems. There were accidents that occurred at the

For example, Fukushima nuclear power plant after the earthquake disaster. At that time, false rumors were spread with a variety of information on these accidents. One false rumor was "Drink a bottle of Povidone-iodine. It will protect you from radioactive damage." After that, the correct information was spread, and it turned out that it was a false

rumor. But, a detailed diffusion process has not been made clear for either false or corrected rumors. So, in this presentation, I will propose a novel information diffusion model, the Agent-based Information Diffusion Model, based on a multi-agent system.

2. AGENT-BASED INFORMATION DIFFUSION MODEL

Our model is based on SIR model which is one famous mathematics model of infection diffusion. In the SIR model, each person in a group is classified into three categories: susceptible person who is not infected yet (Susceptible: S), infected person who becomes sick (Infected: I), and cured person who was cured and gets immunity (Recovered: R). And this time we define some new parameters.

- Degree of influence: a
The degree of influence a represents the magnitude of the influence of information sources. As an actual example, celebrities have a major impact unlike the general population. This value is defined by using a PageRank algorithm. We use this algorithm as the degree of influence a .
- Degree of interest: i
The degree of interest i represents the strength of the interest on the topic of a user. This value expresses the difference in each user's hobbies and diversions. This value becomes large if the topic suits one's interests and hobbies.
- Degree of sensitivity: s
The degree of sensitivity s represents the degree to which a user tends to believe information. Endo et al. said that a user judges the truth of information by using their own knowledge and experience. It is necessary to take this into consideration for each user. The larger this value becomes, the more likely it is for the user to be influenced by information.