SNS で個人の特性をもつメッセージングメカニズムの一解析

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An Analysis of Messaging Mechanism with personal characters on Social Networking Services

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Abstract -- Some Social Networking Services (SNS) transmit and communicate personal opinions to our society with messages from our phycological motivation. Some previous researches did not give us reasons why members on SNS telecommunicate each other freely. We introduce an approach for analyzing mechanism with motivation based on personal characters by mathematical model to solve the above reasons.

Keywords: messaging, social media network, motivation

1 Introduction

Since SNS has started to launch in 1990's, many papers solve about networking structures, behaviors, effects of information transactions, and message exchanging on SNS.

We discuss and try to solve about motivation mechanism for messaging itself on SNS. In some previous papers[1], motivation behaviors are described determination between positive or negative, but these determinations have not solved the reasons why we transmit or communicate to other persons.

On the purpose of this paper is presented to confirm mechanism of personal motivation on SNS by our messaging mathematical model.

2 Messaging model and simulations

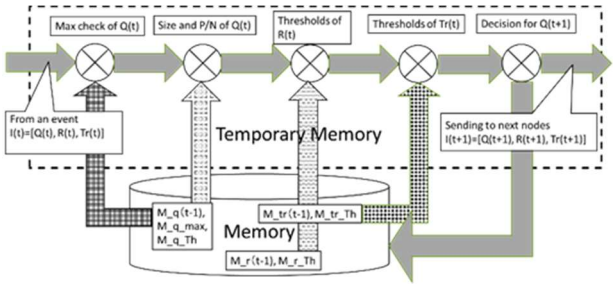

Fig.1: Summary of Personalization from Level 1 to Level 5 in a Node.

we introduce the model with information and impression (reliability and trust) separately as the follow:

$$I(t) = [q(t), r(t), tr(t)] \quad (1)$$

where we denote a node (a member of SNS) at time *t* by a message, *I(t)* from another node or information sources of events, *q(t)* is presented the quantity of the modification and editing with positive or negative opinion. The reliability *r(t)* is the reliability of received messages, *tr(t)* is the trust level of a message source. At time t, a node makes a message to others with motivation against impression of other members and will in (1) as the follows:

$$q(t+1) = f(q(t), M\_q(t)) \quad (2)$$

$$r(t+1) = g(r(t), M\_r(t) \quad (3)$$

$$tr(t+1) = h(tr(t), M\_tr(t)) \quad (4)$$

where the functions $f(.), g(.),$ and $h(.)$ are called modified functions for $q(t), r(t), and\ tr(t)$. The functions $f(.), g(.)$ and $h(.)$ are also related with the motivation factors, $M\_q(t)$, $M\_r(t)$ and $M\_tr(t)$. The motivation factor $M\_q(t)$ is a scale factor indicated the quantity of modification based on original *I(t)* message. $M\_r(t)$ and $M\_tr(t)$ are indicated factors of information reliability and trust.

A node may receive messages from other nodes at the same time. We assumed that the latest message is set by the following strategy:

- each node has threshold ranges for $M\_q(t)$, $M\_r(t)$ and $M\_tr(t)$ individually.
- The selected message has the highest value of $M\_q(t)$, $M\_r(t)$ and $M\_tr(t)$.
- Even though motivation and intention are high, messages might not be sent with depended on reliability of received information and/or level of trust of human relation. In this case, no message may be sent.

We analyzed the message mechanism with levels of personalization level by level in Fig.1. Fig 2. shows one of results[2].

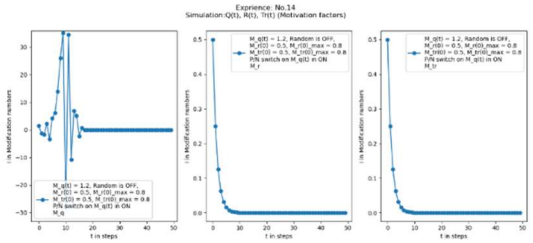

Fig. 2: One of M_q(t) = 1.2, Random is OFF, M_r(0) = 0.5, M_r(0)_max = 0.8, M_tr(0) = 0.5, M_tr(0)_max = 0.8 P/N switch on M_q(t) is ON

Reference

1) David Easley, Jon Kleinberg: Networks, Crowds, and Markets: Reasoning About a Highly Connected World, Cambridge University Press, 563/687 (2010)

2) Hidehiro Matsumoto, Akira Ishia: An Analysis Approach of Messaging Mechanism on Social Networking Services, IEEE Big Data 2020, 5772 (2020)