User Behavior Prediction of Social Hotspots Based on Multi message Interaction and Neural Network

ABSTRACT

In network public-opinion analysis, the diversity of messages under social hot topics plays an important role in user participation behavior. Considering the interactions among multiple messages and the complex user behaviors, this article proposes a prediction model of user participation behavior during multiple messaging of hot social topics. First, considering the influence of multi message interaction on user participation behavior, a multi message interaction influence-driving mechanism was proposed to predict user participation behavior more accurately. Second, in the view of the behavioral complexity of users engaging in multi message hotspots and the simple structure of back propagation (BP) neural networks (which can map complex nonlinear relationships), this study proposes a user participant behavior prediction model of social hotspots based on a multi message interaction-driving mechanism and the BP neural network. Finally, the multi message interaction has an iterative guiding effect on user behavior, which easily causes over fitting of the BP neural network. To avoid this problem, the traditional BP neural network is optimized by a simulated annealing algorithm to further improve the prediction accuracy. In evaluation experiments, the model not only predicted the user participation behavior in actual situations of multi message interaction but also further quantified the correlations among multiple messages on hot topics.

**EXISTING SYSTEM**

In most current models, prediction of user participation behaviors takes into account the user network topology and user basic information while ignoring the impact of messages propagated under hot topics. Sheikhahmadi *et al.* [18] proposed a two-level model that detects and classifies the influence of users by considering the interaction between users. Similarly, Colombo *et al.* [19] established a topological map for studying information dissemination through a social network. Salehi *et al.* [20] extracted the attributes of a multilayer network structure for predicting the probability of microblog forwarding. Other researchers [21], [22] predicted user forwarding behavior through related attributes using a machine-learning method. Grabowicz *et al.* [23] predicted the user forwarding behavior by filtering the factors that are strongly related to user behaviors.

Most of the existing studies predict the nonlinear relationships between the topic data input and the user participation behavior output by traditional machine-learning methods. Lee *et al.* [24] predicted the user forwarding behavior and the time of forwarding by different machine-learning algorithms. Sankaram *et al.* [25] constructed an impact model based on a machine-learning algorithm and predicted the behavior of users and fans. Huang *et al.* [26] measured the user interest in different categories of tweets by a Bayesian model and predicted the forwarding behavior from the interest metrics. Other studies have simulated user participation in messages using infectious disease models, which cannot properly represent the nonlinearity. Huang and Su [27] analyzed the occurrence probability of user behaviors and predicted the user forwarding behavior in a susceptible-infectious-recovered (SIR) model of disease dynamics. Xiong *et al.* [28] proposed a new susceptible, contacted, infected and refractory (SCIR) model (where C denotes “Contacted”) that distinguishes and predicts the user browsing behavior and forwarding behavior in detail.

Disadvantages

* + In the existing work, the system does not Driving Mechanism of User’s Personal Characteristics.
  + This system is less performance due to lack of Parameter Optimization and Forwarding Prediction

**PROPOSED SYSTEM**

* A user participation behavior prediction model based on multi message interaction is constructed. Based on the mapping relationships between the basic user information and participation behavior under the traditional single message, the multi message interaction-driving mechanism improves the completeness of the prediction results. Meanwhile, it is more realistic to describe the process of message dissemination.
* A quantization mechanism based on multi message interaction is proposed. This article can more accurately measure the multi message selection process within the user community by quantitatively evaluating the mutual influence of messages from the perspective of topics. Meanwhile, the hidden influence under the same topic can be qualitatively measured, which leads to user’s participation behavior.
* The BP neural network was improved by the simulated annealing algorithm. This method fits well with the nonlinear relationship between the topic data input and the user behavior prediction output. Moreover, the neural network over fitting problem is solved by the simulated annealing algorithm, and the prediction accuracy is further improved.

**Advantages**

* Multi message interaction mechanisms and nonlinear relationships can be handled by a back propagation (BP) neural network model. The BP neural network is a multilayer feed forward network trained by an inverse error propagation algorithm.
* To The system is more effective due to presence of Driving Mechanism of User’s Personal Characteristics.

**SYSTEM REQUIREMENTS**

➢ **H/W System Configuration:-**

➢ Processor - Pentium –IV

➢ RAM - 4 GB (min)

➢ Hard Disk - 20 GB

➢ Key Board - Standard Windows Keyboard

➢ Mouse - Two or Three Button Mouse

➢ Monitor - SVGA

**SOFTWARE REQUIREMENTS:**

* **Operating system :** Windows 7 Ultimate.
* **Coding Language :** Python.
* **Front-End :** Python.
* **Back-End :** Django-ORM
* **Designing :** Html, css, javascript.
* **Data Base :** MySQL (WAMP Server).