

**SOCIAL NETWORK RUMOR DIFFUSION PREDICATION BASED ON EQUAL
RESPONSIBILITY GAME MODEL**

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ABSTRACT

Because billions of mobile phones build a bridge between mobile sensor networks and social networks, the content of a rumor is diffused faster than ever. Therefore, rumor diffusion becomes an important issue in those two networks and how to predicate rumor diffusion becomes more important in handling rumors when they cause a little impact at the beginning. However, the state-of-the-art diffusion models focus on the macroscopic group impact and ignore the microcosmic individual impact. Therefore, they are not suitable to perform the rumor diffusion predication in the condition of only one rumor spreader at the beginning stage of rumor diffusion. To solve that problem and predicate the rumor diffusion process, we propose a novel game theory-based model, called Equal Responsibility Rumor Diffusion Game Model (ERRDGM), to simulate the rumor diffusion process. In this model, we first depict the diffusion process as a game between the individuals and their neighbors who choose to retweet or not according to their diffusion game revenues; second, the players will share the responsibility of diffusing a rumor in calculating their game revenues; finally, when the game reaches the Nash equilibrium state, we build the rumor diffusion predication graph which indicates the diffusion scale and network structure of rumor diffusion in a social network. According to this idea, our ERRDGM model can capture the diffusion impact of microcosmic individuals and enable us to perform the rumor diffusion process when there are only a few rumor spreaders at the beginning stage of rumor diffusion. Our experiment results indicate that our ERRDGM model can give a more accurate rumor diffusion predication results not only from the diffusion scale but also from the social network structure.

1 INTRODUCTION

In the current information society, billions of mobile phones were used to speed up the information diffusion. As one kind of sensors in sensor network, mobile phones not only build a huge sensor network which carries the information but also form a virtual social network. In Wikipedia [1], a social network is defined as a social structure made up of a set of social actors (such as individuals or organizations), sets of dyadic ties, and other social interactions between actors. Based on the complicated social network structure, rumors were diffused one by one through the social links in a social network. Peterson and Gist [2] defined a rumor as a tall tale of explanations of events circulating from person to person and pertaining to an object, event, or issue in public concern. In our research work, rumors were tagged by human that means all rumors were confirmed by authorities. Although authorities sometimes make mistakes and declare that a post is a rumor, we assume that all rumors are tagged correctly and authorities are trustable to simplify the condition of rumor analysis.

2 RELEATED WORK

A social network is a [social structure](#) made up of a set of [social](#) actors (such as [individuals](#) or organizations), sets of [dyadic](#) ties, and other [social interactions](#) between actors. The social network perspective provides a set of methods for analyzing the structure of whole social entities as well as a variety of theories explaining the patterns observed in these structures.^[1] The study of these structures uses [social network analysis](#) to identify local and global patterns, locate influential entities, and examine network dynamics.

3 IMPLEMENTATION STUDY

Existing System:

In rumor diffusion feature analysis, many related features were studied and showed the essence of rumor diffusion. Arif *et al.* [16] studied the rumor dynamics from three complementary factors: volume, exposure and content production. This fused approach is able to find the relevance between message content and rumor diffusion process in social media during crisis event. Mendoza *et al.* [17] analyzed rumors in 2010 Chile earthquake. Their results showed that the rumor diffusion differed from news diffusion because rumors tended to be questioned more than news by the Twitter community.

Disadvantages:

- The system doesn't provide Rumor diffusion since the techniques are less effective.
- In the existing system, Rumor diffusion is a complex problem which involves sociology, information science and computer science, etc. The reasons of rumor diffusion are the high level of uncertainty, anxiety and lacking official news.

Proposed System & algorithm

The proposed system developed the model in which rumor diffusion process as an individual game process and predicates the diffusion lattice, diffusion scale and diffusion network structure. To simplify the game model, we assume that there is no topic excursion problem which means that we ignore the diffusion content and its changes, we model a social individual behavior according to his/her revenue and risk which are calculated according to Equal Responsibility assumption in rumor diffusion.

4.1 Advantages:

- The proposed system can obtain the information diffusion scale and structure which help us to find rumors with big influences in the future.
- The system is more effective since use the cover degree to measure the similarity between the simulated rumor diffusion network and true rumor diffusion network.

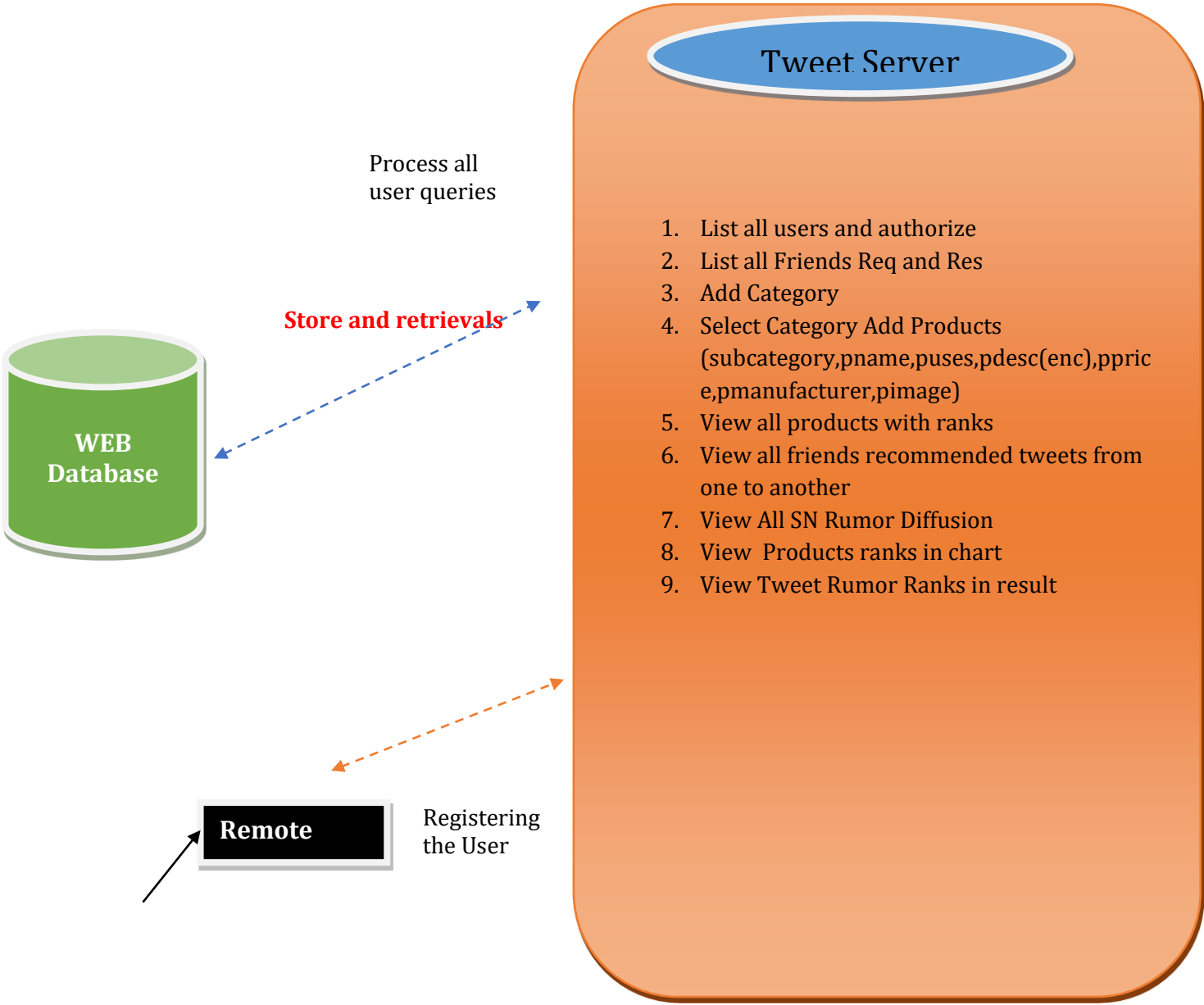


Fig 1. System Architecture

1. IMPLEMENTATION

1.1. Modules

➤ Admin

➤ User

Admin

In this module, admin has to login with valid username and password. After login successful he can do some operations such as view all user, their details, list all friends request and response status, List all users and authorize and user location in geomap, List all Friends Req and Res, Add Category, Select Category Add Products (subcategory, pname, puses, pdesc(enc), pprice, pmanufacturer, pimage), View all products with ranks and all user product tweets details with all features and tweet geo location, View all friends recommended tweets from one to another, View all similar products tweets with all features, View Products ranks in chart, View number of tweets of specified country in charts, View number of users in the same country in chart, View All SN Rumor Diffusion, View Products ranks results, View Tweet Rumor Ranks in result

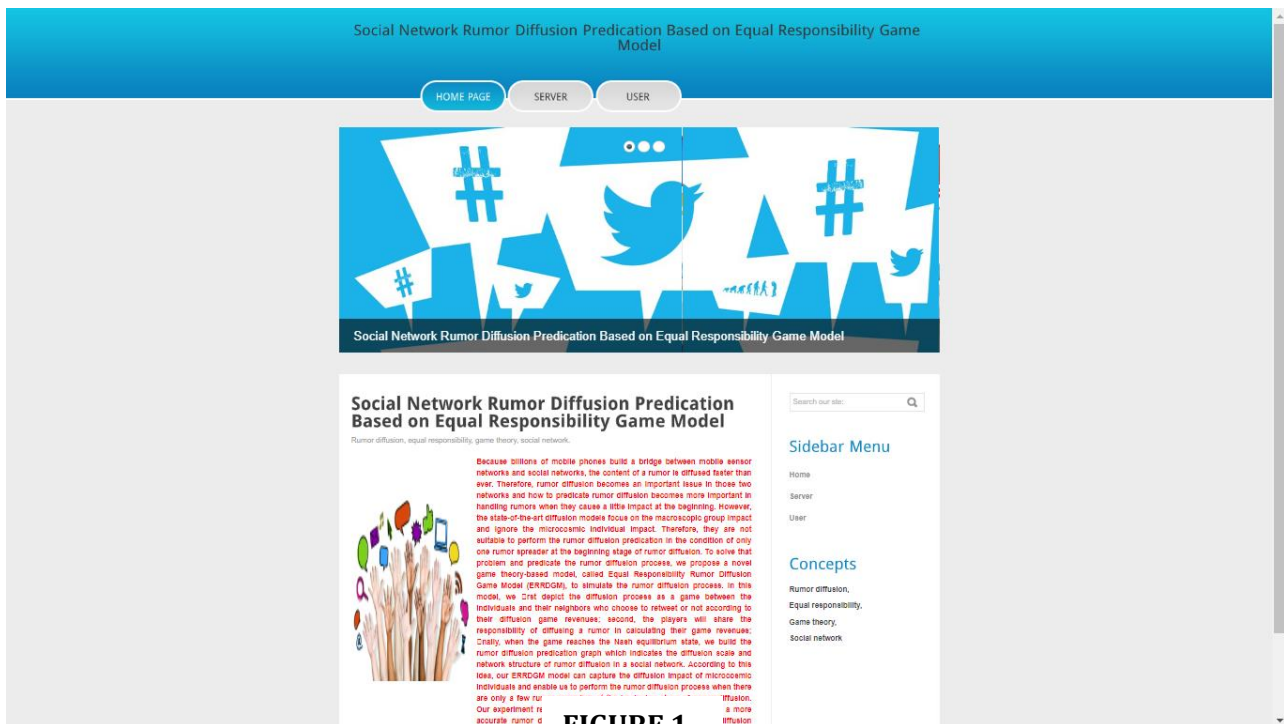
User

In this module, there are n numbers of users are present. User should register before doing some. After registration successful he can login by using valid user name and password. Login successful he will do some operations like search friends and send request and view requests, View your Profile and search friends, req / res friends, View your friends, View your friends based on your country and view users based your country and request friend, Search products By Keyword ---- Search products by keywords, based on contents desc and display all products and, Tweet content and recommend to your friends. , View all your friends recommended products and tweet with all features, View all friends products Tweets with all features.

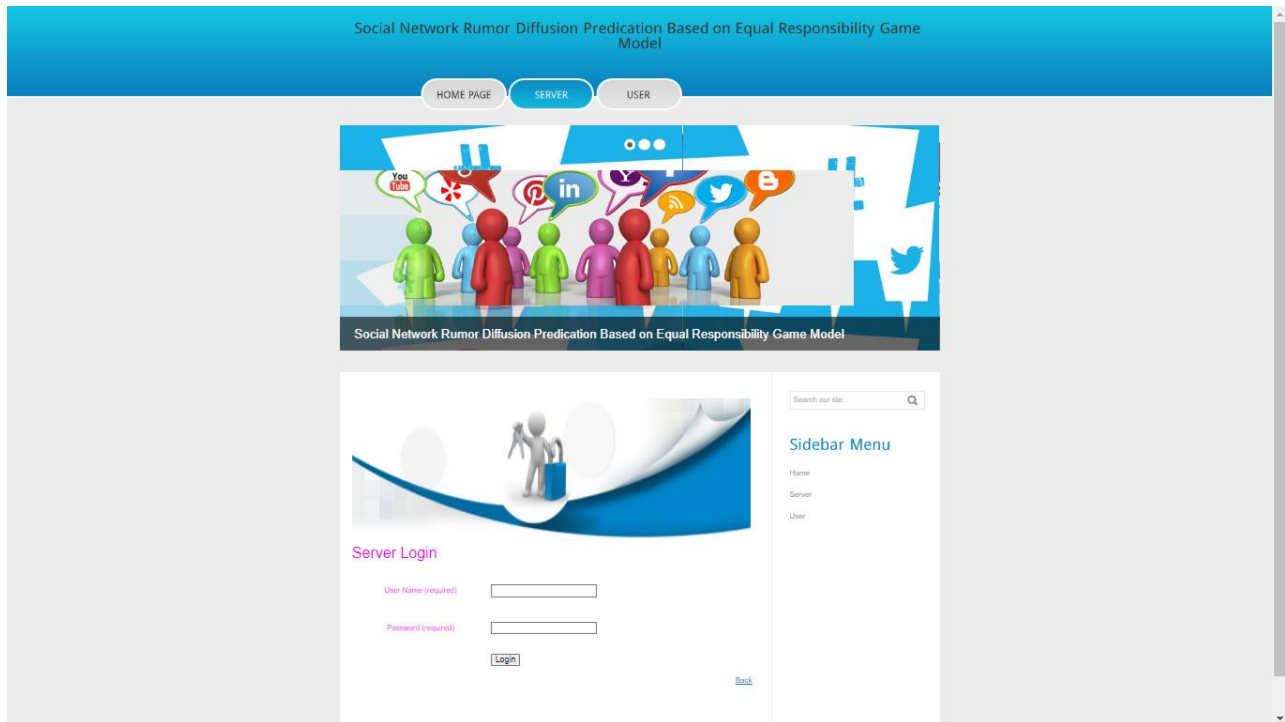
5 RESULTS AND DISCUSSION

SCREEN SHORTS

HOME PAGE



SERVER LOGIN



The screenshot displays a web application interface. At the top, a blue header bar contains the title "Social Network Rumor Diffusion Predication Based on Equal Responsibility Game Model" and three navigation buttons: "HOME PAGE", "SERVER" (which is highlighted), and "USER". Below the header is a large banner image showing a group of colorful 3D human figures with speech bubbles containing various social media icons (YouTube, Facebook, LinkedIn, etc.). Below the banner, the title "Social Network Rumor Diffusion Predication Based on Equal Responsibility Game Model" is repeated. The main content area is divided into two sections. The left section, titled "Server Login", features a login form with two input fields: "User Name (required)" and "Password (required)", both with red error messages. Below the fields is a "Login" button. The right section, titled "Sidebar Menu", contains a search bar and a list of links: "Home", "Server", and "User".

Social Network Rumor Diffusion Predication Based on Equal Responsibility Game Model

HOME PAGE SERVER USER

Social Network Rumor Diffusion Predication Based on Equal Responsibility Game Model

Search our site:

Sidebar Menu

Home
Server
User

Server Login

User Name (required)

Password (required)

Login

[Back](#)

FIGURE 2

WELCOME SERVER

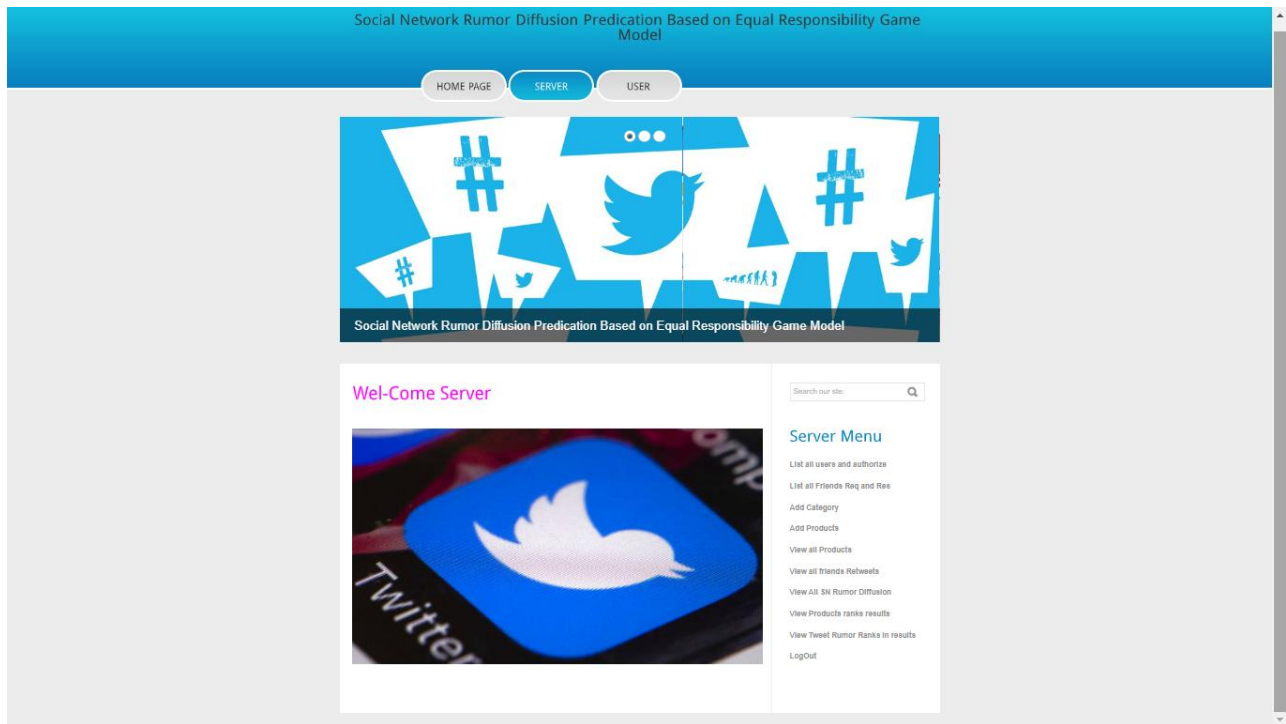


FIGURE 3

VIEW AND AUTHORIZE USER

Social Network Rumor Diffusion Predication Based on Equal Responsibility Game Model

View and Authorize Users..









ID	User Image	User Name	Email	Mobile	Location	Country	Status
3		rakesh	r@gmail.com	9535864270	Bangalore	India	Authorized
4		omkar	r@gmail.com	9535864270	washington	America	Authorized
5		rameesh	r@gmail.com	9535864270	hobart	Hobart	Authorized
6		manu	manoj@gmail.com	9535864270	Bangkok	Bangkok	Authorized
7		maheesh	manoj@gmail.com	9535864270	Mysore karnataka	India	Authorized
8		manoj	manoj@gmail.com	9535864270	mumbai, india	India	Authorized
9		anil	anil@gmail.com	9535864270	kothatta,india	India	Authorized
10		manu	manu@gmail.com	9535864270	Vijayanagar Bangalore karnataka india	India	Authorized

FIGURE 4

SERVER ADD CATEGORY

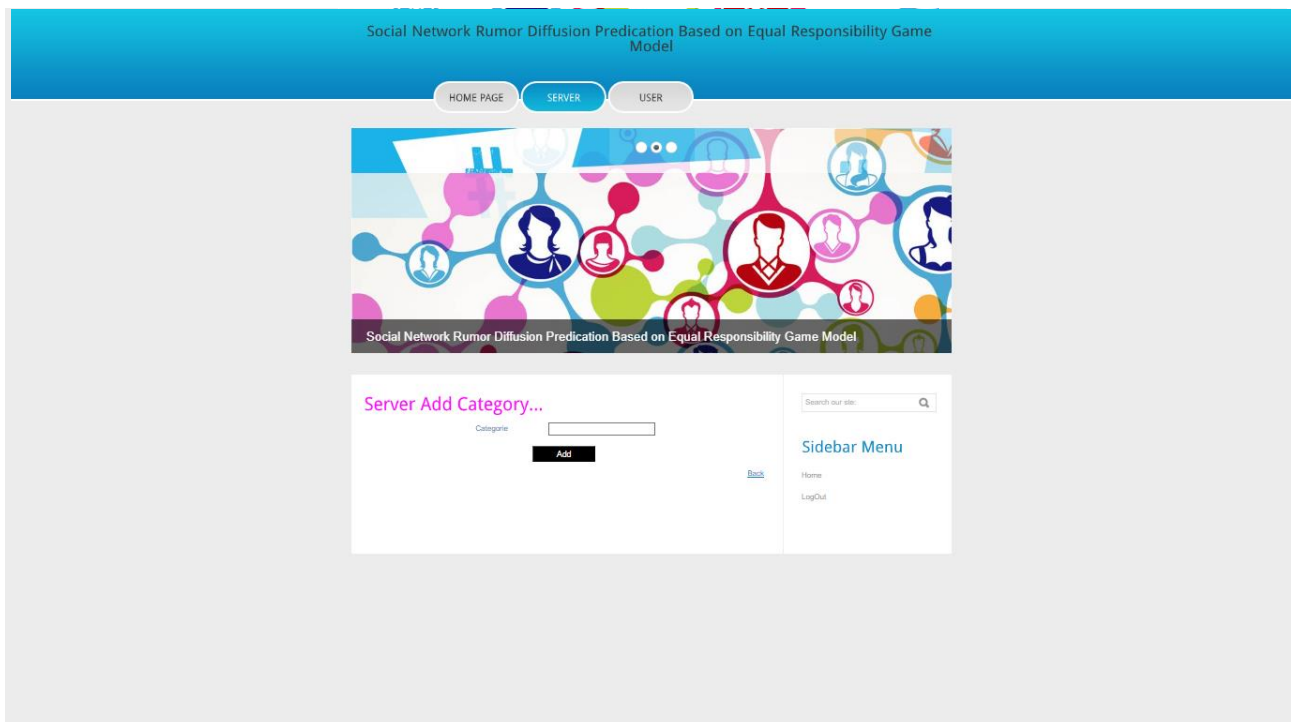


FIGURE 5

USER RECOMMENDED PRODUCTS

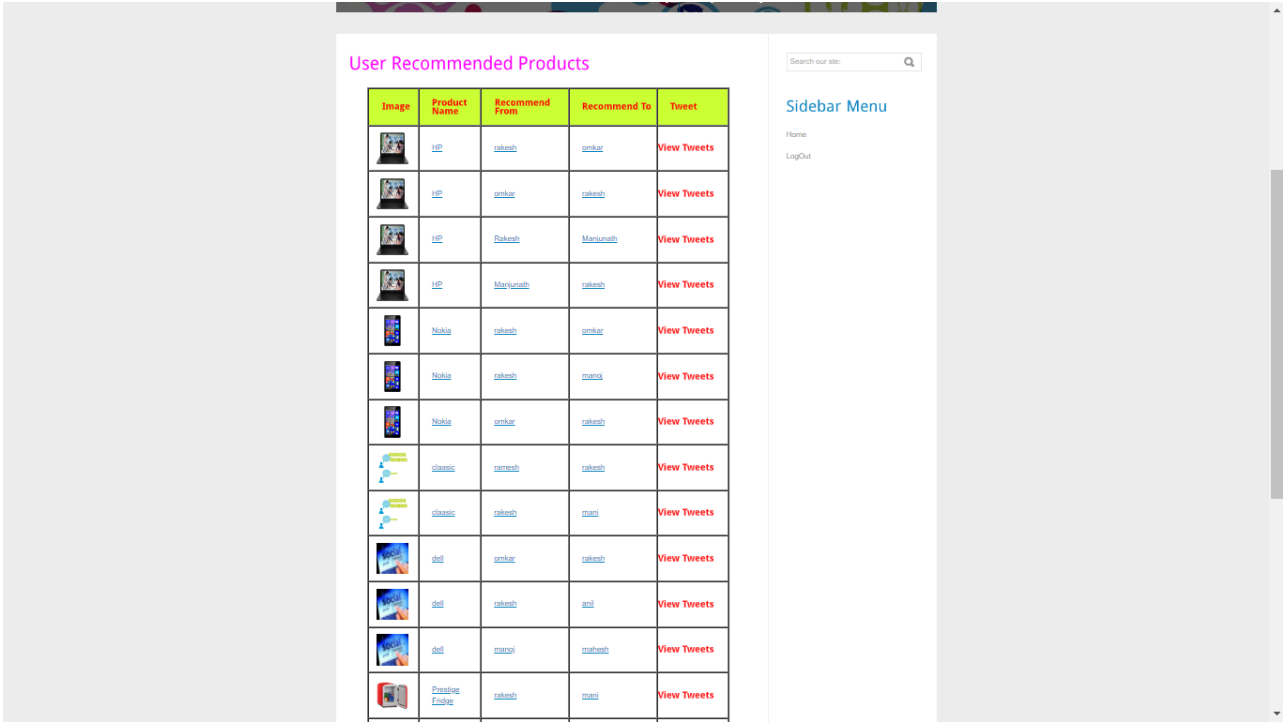


FIGURE 6

VIEW ALL RIMOR DEATAILS

Social Network Rumor Diffusion Predication Based on Equal Responsibility Game Model

HOME PAGE SERVER USER

Social Network Rumor Diffusion Predication Based on Equal Responsibility Game Model

View All Rumor Details....

Product Name	Username	Tweet Details	Date & Time
HP	Ahsok	This is very good laptop	16/07/2019 14:51:00
dell	Kumar	This is bad product	16/07/2019 15:32:24
SamsungJ2	Prabhu	IT is not Good product.Don't purchase	16/07/2019 16:31:45

[Back](#)

Search our site:

Sidebar Menu

[Home](#)


[LogOut](#)

FIGURE 7

SERVER ADD PRODUCTS

Social Network Rumor Diffusion Predication Based on
Equal Responsibility Game Model

HOME PAGESERVERUSER



Server Add Products...

Select the Category--Select--

Sub-Category

Product Name

Product Uses

Description

Price

Product Manufacturer

ImageChoose FileNo file chosen

Add Post

Search our site

Q

Sidebar Menu

Home

LogOut

Back

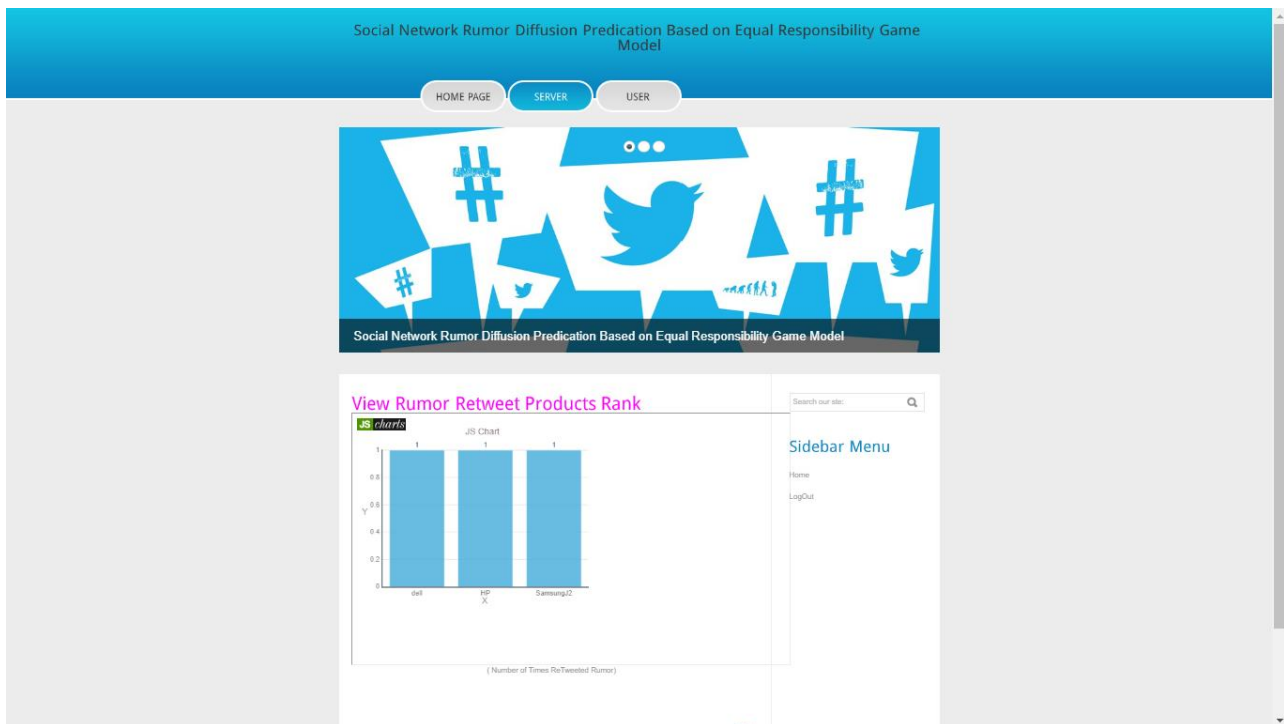
FIGURE 8

VIEW PRODUCTS RANK



FIGURE 9

VIEW RUMOR RETWEET PRODUCTS RANK



**FIGURE
10**

USER REGISTER STATUS

Social Network Rumor Diffusion Predication Based on Equal Responsibility Game Model

Register Now

User Register Status...

(*) Required

User Name*

Password*

Email*

Mobile Number*

Your Address*

Select Gender*

Your Location*

Date of Birth*

Pin Code*

Country*

Time Zone*

User Language*

Select Offset*

Select Profile* No file chosen

REGISTER

[Back](#)

Search our site:

Sidebar Menu

- Home
- Server
- User

**FIGURE
11**

USER LOGIN

The screenshot displays a web application interface. At the top, a blue header bar contains the title "Social Network Rumor Diffusion Predication Based on Equal Responsibility Game Model" and three navigation buttons: "HOME PAGE", "SERVER", and "USER". Below the header is a banner image featuring colorful 3D human figures and various social media icons (YouTube, Google+, LinkedIn, Facebook, Twitter, etc.). The main content area is divided into two sections. On the left, the "User Login" section includes a header image of a person with a briefcase, followed by input fields for "User Name *" and "Password *", a "Login" button, and links for "New User?" and "Register". On the right, a "Sidebar Menu" section contains a search bar and a list of links: "Home", "Server", and "User".

Social Network Rumor Diffusion Predication Based on Equal Responsibility Game Model

HOME PAGE SERVER USER

Social Network Rumor Diffusion Predication Based on Equal Responsibility Game Model

User Login

User Name *

Password *

Login New User? Register

Back

Search our site:

Sidebar Menu

Home

Server

User

**FIGURE
12**

6. CONCLUSION AND FUTURE WORK

CONCLUSION

Rumor diffusion predication is a challenge work because of the complicated social network structures and individual diffusion purposes. To simulate the rumor diffusion process at the beginning stage of rumor diffusion, we use game theory to model the diffusion revenue and propose an ERRDGM model which is based on the assumption that the spreaders will share the responsibility of diffusing a rumor. The experiment results show that our model can effectively simulate the rumor diffusion process in social networks and the simulated results are similar to the true diffusion networks. However, in our model, the attribute of individual is not considered. Therefore, in our future work, we will use the users' posts to build users' profiles which help us to deeply consider why an individual will diffuse a rumor.

7. REFERENCES

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