Innovation Path of News Communication Based on Big Data

Jurong Wang¹*,

¹School of Culture and Media, Eurasia University in Xi'an, Xi’an, 710065, Shaanxi, China

*Corresponding author E-mail: wangjurong@eurasia.edu.com

Abstract. The rapid development of big data makes our life age transition from the "information age" to the "data age". All walks of life use big data to change production and life. This change will inevitably affect the field of news dissemination. Combining the application of big data in all social classes, we first discuss the concepts of online media and big data, starting with the relationship between online media and big data, explaining the factors of online media using big data and applying big data to online media Variety. Among them, the factors of big data multimedia Web applications include: visual content presentation, mobile communication channels, personalized information acceptance and social information interaction. Although people have done a lot of research on new ways of news dissemination, there are still many shortcomings. This paper studies the extremely fragile topology of wireless sensorless networks facing selective attacks, and uses the principle of local optimization to propose a secure routing algorithm for multi-feature decision-making in wireless sensor networks based on topology. The model defines parameters such as node power transmission efficiency, load and packet loss rate as features, and uses relative entropy to calculate the weight of each feature to create a multi-feature decision model. The node selects the best path according to the decision model. This model takes into account the dynamic characteristics of the network and effectively compensates for the deficiencies of the existing algorithms. These algorithms only solve the problem of scale-free topology attacks from the network structure. Using the method in this article, the spread of big data news has increased by 18%.

Keywords: Big Data, News Dissemination Path, Ir Theory, Local Optimal Principle

1. Introduction

In recent years, big data has had a significant impact on academia. In the field of news dissemination, there are also a large number of articles discussing changes in news dissemination from the perspective of big data. By choosing topics, most of these articles are focused on news production, news broadcasting, and feedback mechanisms. However, these articles mainly focus on the surface of the news, rather than the essence of the media. Most of them start from the two aspects of traditional media transformation and media integration, and inevitably have unilateral discussions in the media. In fact, the advent of the big data era has had an overall impact on the media, not only subverting the...
production of information and the dissemination of traditional media, but also has a major impact on online media.

From the perspective of big data, most current online media development strategies are focused on news dissemination fields without interdisciplinary integration. Such discussions can easily become one-sided and cannot understand the development model of online media. Therefore, this article is bold and innovative, trying to give a comprehensive explanation of marketing and management.

With the rapid development of modern society, news has become our main way of obtaining information. Therefore, more and more people are devoted to studying news dissemination methods. And he achieved good results. For example, Bertodi has made great contributions to news dissemination through wireless short-range wireless technology, but with the development of society, science and technology have become out of date, so this method is no longer applicable. Therefore, this article uses WSN as the experimental method in this article. Using the method in this document can avoid this problem, and the WSN topology method can extend the life cycle of the network and increase the network power.

This article believes that topological heterogeneity can achieve strong scale-free network fault tolerance, but topological heterogeneity will make the network extremely vulnerable to selective attacks, especially when a few nodes in the network are attacked, the entire network will be paralyzed. Therefore, in order to optimize the intrusion tolerance of the scale-free topology, the redundancy backup method is mainly used for key nodes or important links. However, this method increases the complexity of the network. In this article, the adjustment parameters may be compatible with the random network model and the BA network model to enhance the intrusion tolerance of the topology, but this model has no scale and electricity price characteristics without scale, so it is impossible to analyze the influence of topology parameters on the network intrusion tolerance. Through the method of this article, the news dissemination rate has increased by 18%.

2. Research Method of News Communication Innovation Path Based on Big Data

2.1 BA Scale-Free Model And Degree Distribution Research

The BA model proposal is an important step in the research of scale-free networks. In 1999, Barabasi and Albert proposed the famous network model-BA model in "Science" magazine. Successfully explained Model BA for the first time. The scalable network mechanism points out that deployment and prioritized connections are two key steps in creating a non-scalable network. The formation process of the BA model is shown in Figure 2-1, where development and priority connection are the two basic conditions for the formation of a scale-free network.

Growth: The initial network contains $M_0$ nodes. At each time step, a new node is added to the existing network, and $m (m < m_0)$ edges from the new node are added to connect to the old node;

Optimal connection: When selecting a new node to connect to a node in the network, suppose that the probability of the new node being connected to the original node $i$ of the network is $\pi(K_i)$, and $\pi(K_i)$ depends on the node degree $K_i$ of node $i$, subject to the following rules:

$$\pi(K_i) = (K_i) / \sum_j K_j$$

After $t$ time steps, the BA model generates a network with $N=M_0 + T$ nodes, the network of $T$ ends, and the initial network consists of two interconnected nodes. In each step of the evolution, a new node is added to the network. It can be seen from the figure that there are many level 1 nodes and some high level nodes in the network. This non-uniformity of the scale-free network will lead to higher fault tolerance in the event of unexpected node failures, but the figure also shows that there are many individual nodes in the network. Once these nodes are attacked, the network will also be paralyzed.

The following is an analysis of the characteristics of the level distribution of the scale-free network:
The level distribution of the BA model obeys the power-law distribution, and the expression of the level distribution is: \( P(K) \sim 2M^2K^{-3} \). Using the continuous domain theory, the degree distribution of the BA model can be analytically obtained as follows:

\[
\left( \frac{\partial K_i}{\partial T} \right) = M \cdot \pi(K) = M \cdot K_i \sum_j K_j
\]

At time T, the network evolves MT edges. From this, the total node degree in the network at time T is:

\[
\sum_j K_j = 2MT
\]  (3)

Substituting formula (3) into formula (2), we can simplify:

\[
\left( \frac{\partial K_i}{\partial T} \right) = M \cdot K_i \sum_j K_j = M \cdot K_i / 2MT = K_i / 2T
\]  (4)

Solving the differential equation of formula (2-4), combined with the initial conditions can be calculated:

\[
K_i(T) = M \cdot (T / T_i)^{1/2}
\]  (5)

Then the probability that the degree of node i is less than k can be obtained by the following formula:

\[
P(K_i(T) < K) = P(M \cdot (T / T_i)^{1/2} < K) = P(T_i > (M^2 T / K^2))
\]  (6)

The above mainly introduces the relevant concepts and scoring attributes of the BA scale network, and concludes that development and priority connections are the two basic conditions for creating a scale network. The proposed BA model provides a new idea for controlling the resistance of topological errors. Then, the non-scale features and strong fault tolerance are analyzed through leakage theory.

2.2 The Method of Big Data

Big data is a direct translation of the English word "Big Data", which originated in the West. For the understanding of big data, as mentioned above, in 2011, the well-known American consulting company McKinsey officially gave the concept of big data. "Big data means that the volume of data exceeds that of traditional databases to collect, store, control, and control. Management ability", 14 This is similar to the big data we currently understand. The 2014 White House report put forward that "big data is data composed of tens of millions of bytes left by tens of millions of people on thousands of platforms (such as the Internet, social media, mobile phones, etc.)." 15 In China, 360 Baike has made this interpretation of big data. Big data "refers to the massive, high growth rate and diversification that require new processing modes to have stronger decision-making power, insight and process optimization capabilities. Information assets.” Obviously, 360 Baike’s understanding of big data is based on the analysis of the Internet market of big data. In short, big data generally refers to the volume of data beyond the traditional, and cannot be stored and analyzed by traditional technologies. Understanding of Big Data Each field has its own definition. If you want to better understand and use big data in any field, you must understand the characteristics of big data.

2.3 News Dissemination

Journalism and communication are sciences that study the production and communication process and laws of news, reflect social phenomena, and convey social information. Traditional news media include newspapers, radio and television. Although magazines are also traditional media media, because of the "newness" of news and the pursuit of timeliness, newspapers, radio, and television, such media with a short production cycle, belong to news media. In recent years, with the rapid development of modern computer technology and the popularization of network technology, the transmission speed of information is based on the transmission speed of radio waves and network
signals. The speed at which people produce information and the speed at which information is spread ushered in a brand new one. Era. The traditional news media, which has been unchanged for hundreds of years, has ushered in an era that must be changed.

Journalism education is an important part of the construction of new liberal arts. Under the new educational situation, journalism education should open up a new development situation, and strive to cultivate outstanding talents with international perspectives and Chinese characteristics to meet the needs of society for journalism and communications talents. Journalism education must move towards the goal of first-class undergraduates, first-class majors, first-class courses, first-class teachers, first-class quality assurance, and first-class talents, and strive to integrate new situations, new models, new goals, new developments, new fields, and new steps into excellent news communication. The talent education training plan is under construction.

3. Experiments on the Research of Innovation Path of News Communication Based on Big Data
This object conducts a simulation study on the WSMR algorithm to verify whether the theoretical basis of the algorithm is consistent with the actual situation. According to the scale-free topology formation mechanism, the scale-free topology network is first constructed, and then the number of hops is determined according to the corresponding mechanism between nodes. We have obtained the hop count node and network level distribution characteristics to find the best network parameter a, and simplified the simulation experiment. Here we don't need the routing number, we adjust the routing hop count according to the actual simulation state according to this simulation. Combining the AOMDV algorithm and the EDMR algorithm, the performance of different multipath routing methods in resisting selective forwarding attacks and balancing network power consumption is analyzed.

4. Analysis of the Research on the Innovation Path of News Communication Based on Big Data

4.1 Simulation Experiment and Performance Analysis
This paper compares the MATLAB simulation experiment with the representative EAEM and EBFL energy-saving algorithms and the BA algorithm with better fault tolerance. In the simulation experiment, the EAEM, EBFL, BA and FTEL algorithms use the same initial grid ratio and assume that the nodes have the same initial energy. The parameters of the simulation experiment are shown in Table 1. The result of each experiment is the average of 50 experiments.

| parameter                          | Value       |
|-----------------------------------|-------------|
| Number of nodes N                 | 100         |
| Node distribution area            | 300*300     |
| Maximum transmission radius of node | 70         |
| Initial energy                    | 1           |
| Node generates data packet        | 100         |
| Data fusion energy consumption    | 0.000005    |
| Amplifier power consumption       | 0.00000001  |

4.2 Network Life Cycle Comparison
In order to measure the lifetime of the FTEL model, the lifetimes of the EAEM, EBFL and FTEL models were simulated and compared, and the time when the first node was exhausted was recorded as the lifetime of the network. The longer the grid life, the more balanced the power consumption of the topology, and the better the energy saving effect; the shorter the grid life, the more uneven and the
worse the power consumption of the topology. Energy saving. In each round of experiments, the power consumption model defined in Section 3.1 is used to transmit data to adjacent nodes until the network ends when a faulty node occurs, at which time the network life cycle ends and the node life cycle ends. The moment is recorded as the network lifetime. Figure 1 shows that the first node of these three models runs out of time.

Figure 1. Relationship between node degree and energy

Figure 1 shows that both EAEM and FTEL have the following characteristics: the higher the node energy, the higher the power consumption of WSN, but the BA algorithm does not have this characteristic. This is because the EAEM algorithm and FTEL form a topological structure, so the remaining energy of the node is always considered, and nodes with more remaining energy are more likely to be connected, and FTEL is also superior to EAEM in terms of energy balance. This is because the FTEL model considers the interaction between the remaining energy of the node and the load, so the constructed topology has a better energy-saving effect. Based on the above analysis, compared with EAEM and BA, the FTEL model is more suitable for the actual evolution characteristics of WSN.

4.3 Fault Tolerance Analysis

In WSN, node failures occur randomly, and each node has the same chance of accidental failure. In order to measure the fault tolerance of the FTEL topology, FTEL, EAEM and EBFL are compared in simulation experiments, and it is assumed that all nodes in the network have the same failure probability, and the largest network connected is used as an effective detection area. Currently, the number of nodes in the largest connected branch is the number of surviving nodes in the network, and the number of nodes in the largest connected branch is considered fault tolerance. In each round, each node exchanges data with its neighbors, and randomly subtracts one node and deletes exhausted nodes, then calculates the number of nodes in the largest connected branch in the network and uses the size of other nodes. Relevant standards are used as standards for determining the tolerance of topology errors. All FTEL, EAEM and EBFL models show strong resistance to unexpected failures. This is because the scale-free topology evolution model is based on the best connectivity, with high-level nodes occupying only a small number of nodes, while low-level nodes occupying a larger proportion. When nodes in the topology encounter random failures, nodes with a smaller degree are more likely to fail, and therefore have less impact on network connections. Compared with EAEM and EBFL, FTEL model
has better fault tolerance. This is because the unexpected failure of WSN is mainly due to energy
ehaustion, and FTEL considers energy and load factors when selecting the best connection and better
balancing nodes. The energy load is large, so the topology has better fault tolerance.

5. Conclusions
As the perception layer of the Internet of Things, WSNs are responsible for the perception and
transmission of data. With the continuous advancement of IoT applications, its routing security has
increasingly become an obstacle to rapid development. The scale-free topology can meet the fault
tolerance requirements of WSNs in harsh environments, and the topology based on the scale-free
theory does not need to add redundancy. The remaining links can meet the low energy consumption
requirements of WSNs, but the scale-free topology is restricted by the vulnerability to deliberate
attacks, and its secure routing is the current application hot spot. However, this article also has
shortcomings, mainly reflected in:

(1) The research on the anti-attack performance of WSNs scale-free topology in this paper is based
on the network structure and lacks the analysis of the dynamic network traffic.

(2) The algorithms designed in this paper are designed based on the characteristics of selective
forwarding attacks. However, as the application further deepens, the attacker's attack methods are
diversified, and selective forwarding attacks are often only one of their attack methods.

From the history of the development of news dissemination, we can see that the times are
developing, science and technology are advancing, people's requirements are constantly improving,
and the methods of news dissemination are constantly optimizing. Technology never stops advancing.
Perhaps in the near future, the way we understand news will continue to change and become more
convenient and faster.

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