

Research on the Back to School Safety Assessment Method of College Students based on Big Data

Jianing Sun, Chuansheng Wu

Liaoning University of science and Technology, China

Abstract

The project has disclosed the back to school safety assessment method for college students based on big data, including the following steps: 1) building geographic information big data: the server side collects and uploads the basic data through the client side, crawls through the web and interacts with the school's multi system to build the big data of epidemic geographic information;2) Spatial analysis of geographic information: Based on the big data of epidemic geographic information, the geographic information map is constructed, and the spatial analysis method buffer analysis is combined to complete the spatial analysis of geographic information to obtain the regions with severe epidemic situation and mild epidemic situation;3) Security assessment: the client sends a security assessment request to the server, and the server generates the user's motion track according to the current location of the client, compares it with the severe epidemic area and the mild epidemic area stored in the server, judges whether the user's movement track coincides with the severe epidemic area, and sends it to the client according to the feedback of the comparison.

Keywords

Epidemic Situation; Big Data; Back to School.

1. Introduction

With the promotion of epidemic prevention and control, the domestic epidemic situation has been effectively controlled, and schools will welcome students from all over the country to return to school. Because the school can not timely and accurately understand the information of students, the school's epidemic prevention and control work and the health and safety of students have been challenged. With the rapid development of big data application, geographic information data big data has been paid more and more attention. As the last step of the application of geographic data, the visualization of geographic information data can show the rules of spatial distribution more intuitively.

2. Project Content

The purpose of this project is to provide a big data based back to school safety assessment method for college students in view of the shortcomings of the existing technology. The specific location of the user can be obtained through the user's mobile phone positioning, and a large amount of online data can be obtained by using the crawler technology, and the existing data resources of the university can be used. Based on the above data, the construction of geographic information big data, combined with geographic information analysis method, the use of big data analysis methods for school epidemic analysis and safety assessment of students back to school.

The technical problems solved in this project can be realized by the following technical solutions:

The back to school safety assessment method based on big data includes the following steps:

1) Construction of geographic information big data: the server collects and uploads the basic data through the client, crawls through the web and interacts with the school multi system to construct the big data of epidemic geographic information;

2) Spatial analysis of geographic information: Based on the big data of epidemic geographic information, the geographic information map is constructed, and the spatial analysis method buffer analysis is combined to complete the spatial analysis of geographic information to obtain the regions with severe epidemic situation and mild epidemic situation;

3) Security assessment: the client sends a security assessment request to the server, and the server generates the user's motion track according to the current location of the client, compares it with the severe epidemic area and the mild epidemic area stored in the server, judges whether the user's movement track coincides with the severe epidemic area, and sends it to the client according to the feedback of the comparison.

In the construction of geographic information map, buffer zone is set on it to determine the influence range of coronavirus diagnosis target. Around the point, line and surface entity, a certain width area is automatically established, and the spatial proximity and proximity degree with the epidemic diagnosis target are determined, and the regions with severe epidemic situation and mild epidemic situation are divided in turn.

Based on crawler technology, geographic information big data is constructed, and the results of risk analysis are presented in the form of map by using the risk analysis of buffer.

According to the user's location, access to the user's location, access to the user's security buffer based on the user's location.

3. Innovation

1) Buffer analysis, a spatial analysis method of geographic information, was used to understand the regions with severe and mild epidemic situation, so as to facilitate risk assessment;

2) Based on crawler technology, geographic information big data was constructed, and the epidemic data was analyzed by big data analysis method;

3) Based on mobile phone geographic location information and geographic big data information, the safety assessment of students returning to school is carried out.

4. Description of Drawings

This project involves the back to school security assessment method of college students based on big data, which includes three parts: Building Geographic Information big data, geographic information spatial analysis and security assessment, as shown in Figure 1. The data sources of geographic information big data include user collected and uploaded data, web crawler crawling data, and school multi system interactive data, etc. the epidemic geographic information big data is constructed by the above data as the basic data of the system; Based on the big data of epidemic geographic information, the geographic information map was constructed, and combined with the spatial analysis method buffer analysis, the spatial analysis of geographic information was completed to understand the areas with severe and mild epidemic situation; According to the results of geographic information spatial analysis, risk assessment is carried out, and geographic information big data epidemic analysis, safety risk assessment and corresponding measures of epidemic prevention and control are visually presented to users, which is convenient for epidemic prevention and control in schools and effectively ensure the health and safety of students. The details are as follows:

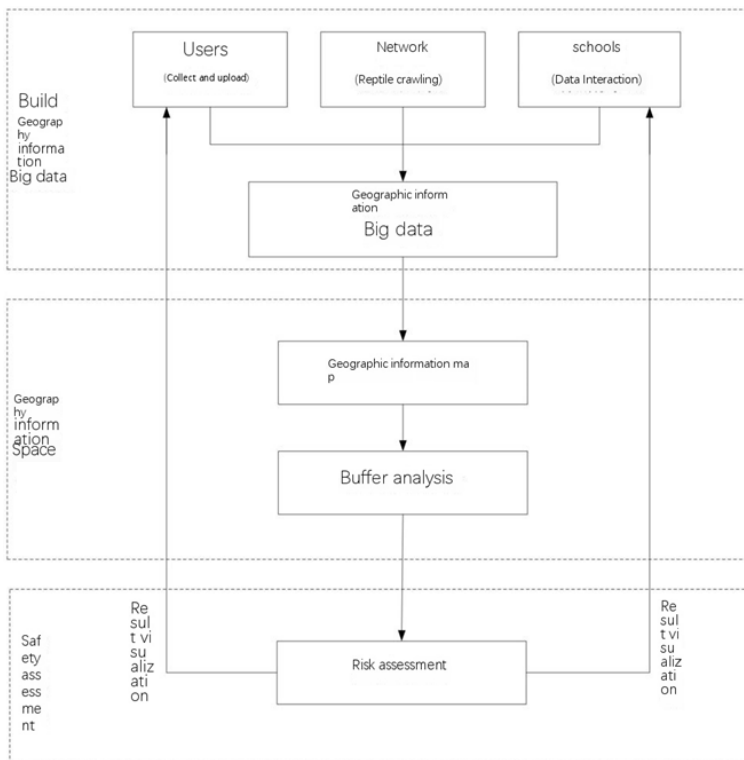


Figure 1. Shows the system structure of the project

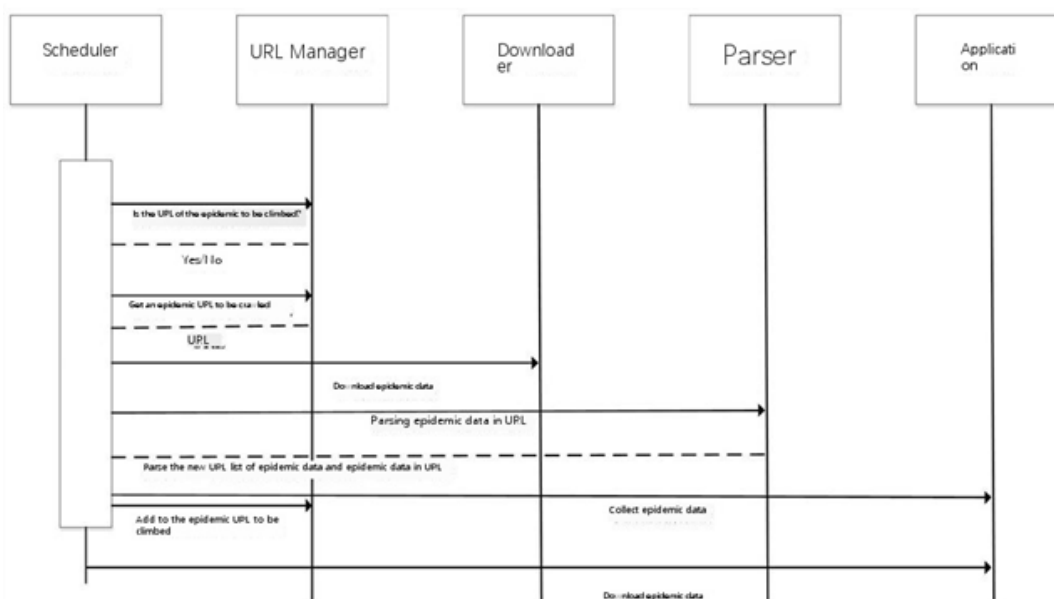


Figure 2. Shows the data flow chart of this project

(1) At present, each place in the country has its own portal website, and the specific epidemic data will be published during the epidemic period. The project downloads the epidemic data of each city through the web crawler technology. The data collection is divided according to the region. The smallest street is taken as the unit, and the epidemic related URL of each street is retrieved to obtain the epidemic data, which is collected every day. In order to do the overall analysis later, the technical route is shown in Figure 2. In the program, the project through the user in the program to fill in the following content: student number, student name, college, class, contact phone number, health status, three situations, the current situation of the region, and

so on. The health status is divided into the following three situations: suspected patients with new crown pneumonia, patients diagnosed with new crown pneumonia, others. There are three situations: staying in area a after January 10, 2020, having close contact with confirmed patients, and still staying in area a a few days ago. The local situation is to leave yesterday's county / go abroad / return home. The way to obtain students' information can also be obtained through the official information of the school, such as student number, class and so on. Then save the above data and save the data.

(2) Based on the geographic information map of epidemic situation based on big data, combined with spatial analysis method buffer analysis, the spatial analysis of geographic information was completed to understand the areas with severe and mild epidemic situation. According to the principle of spatial information, there is a spatial similarity between the non-uniform elements and their surrounding units. In order to express the influence degree and scope of the geographical location on the surrounding environmental factors, it is a kind of influence scope or service scope of the geospatial target, specifically refers to a certain width of multilateral automatically established around the point, line and surface entity.

(3) Among them, the application of the buffer zone is as follows: display the number of new coronal cases in different areas around the school; The application of line buffer is as follows: the buffer zone of the line is used to judge whether the student has passed through the severe epidemic area; For example, if the number of cases within a certain range reaches a certain degree, the area can be judged as a serious epidemic area, and students can be reminded to avoid such areas when they return to school.

(4) Using the data obtained from buffer analysis, we can analyze whether the students are suitable to go back to school. If we plan a safest path for students while we are suitable for returning to school, we should try our best to avoid cities in area a in extremely high risk area. After arriving at school safely, we should continue to isolate for 14 days to further observe the physical condition of students, Go back to school and continue to fill in every item in the program as required for data management. If it's not appropriate to go back to school, stay at home and fill in the contents of the program.

5. The Data Acquisition of the Embodiment Can Solve the Following Problems

1) Based on the crawler technology, the distribution of epidemic geographic information can be obtained, and the big data of epidemic geographic information can be constructed to solve the problem of obtaining basic epidemic data.

2) The buffer technology was used to determine the influence range of the coronavirus diagnosis target. A certain width area was automatically established around the point, line and surface entity, and the spatial proximity and proximity degree with the coronavirus diagnosis target were determined. Based on this, the area with severe and mild epidemic situation was analyzed, and the problem of non visualization of most epidemic data was solved, and the epidemic area was easier to judge.

3) Through risk assessment and analysis, visual analysis results and school epidemic prevention and control measures are provided. We have solved the problem of failing to use epidemic data in school epidemic prevention and control, effectively strengthened the management of school epidemic prevention and control, and effectively guaranteed the health and safety of students.

6. Conclusion

The above shows and describes the basic principles, main features and advantages of the project. Technical personnel in the industry should understand that the project is not limited by the above-mentioned implementation examples. The above implementation examples and instructions only describe the principle of the project. Without departing from the spirit and scope of the project, there will be various changes and improvements in the project, and these changes and improvements fall into the scope of the project to be protected. The scope of protection required by the project is defined by the attached claims and their equivalents.

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