Design and Implementation of Campus Application APP
Based on Android

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Abstract. In this paper, "Internet + campus" as the entrance of the Android technology based on the application of campus design and implementation of Application program. Based on GIS(Geographic Information System) spatial database, GIS spatial analysis technology, Java development technology and Android development technology, this system server adopts the Model View Controller architectue to realize the efficient use of campus information and provide real-time information of all kinds of learning and life for campus student at the same time. "Fingertips on the Institute of Disaster Prevention Science and Technology" release for the campus students of all grades of life, learning, entertainment provides a convenient.

1. Introduction
With the popularity of the network and mobile network speed, making people tend to use the way in the mobile client to easily access information. Campus is the place to learn every student life, rich and diverse campus information is bound to provide more convenient for our study and life, and the current market, the main function of Application can provide college students with more learning and entertainment, so we develop the establishment of Android-based campus learning life Application ---- "fingertips on Institute of Disaster Prevention Science and Technology " , Specifically for the campus students to provide all kinds of learning and living real-time information. This paper introduces the development process of this system in detail[1-2].

2. System analysis
The system from the students themselves, with the campus panorama, free classroom, campus lectures, knowledge world, express speed, campus recruitment, campus weather and knowledge forums and other basic functions.
"fingertips on Institute of Disaster Prevention Science and Technology " is through the integration of GIS to provide the query, analysis and other map functions, to provide students with campus building, cafeteria, dormitory, road search function, path analysis function, peripheral query function and thematic map, heat Figure display function. The spatial analysis, buffer analysis and optimal path analysis of GIS are used to provide information such as building, canteens, dormitories, roads and the optimal path and surrounding food in the form of map display. Compared with the traditional way of obtaining information, the campus information obtained through the mobile client not only has the characteristics of fast speed, full content and new information, but also can be used as information publishers, at any time you see and hear the information published for other Students to facilitate. Specifically shown in Figure 1:
3. System design

3.1 Data design
A well-designed and powerful system requires full data as a basic support, so we collected data on campus and surrounding, for example teaching buildings, cafeterias, dormitories, attractions, hotels, food, roads and so on, obtaining the relevant data by Google map and Tencent map. Then we create a new data source, import the campus map data to register the map as a digital basis. Meanwhile transforming the coordinate system that will be transformed to Xi’an 80 coordinate system. Draw the base map, roads, trees and other simple data sets by a registered map. According to various data resources to build eight entity attributes different form, including things for information, classroom information, express information, knowledge forum reviews, campus lectures, campus building information, personal location information and recruitment information.

![Figure 1. Functional structure diagram](image-url)
3.2. Structure design

This system adopts the Model View Controller design pattern, which is implemented through the servlets + JavaBean + Dao pattern, and organizes the idea of "model establishment, algorithm research-system implementation"[3]. The specific development of the Android platform based on the Java language native Application, it provides developers with notify the manager and event manager, window manager, such as top ten components, as a foundation for the development of this software application. Specific project implementation design basic data for the research through the north and the south campus, unified coordinate system, the design based on MySQL 5.6 version of the GIS spatial information database, data encapsulation in the javabeans, and convenient query results between the Servlet and Android page, use the Dao to connect to the database and database query, delete, change operations, such as through the Servlet validation data, instantiation JavaBean, called Dao connect to the database and business logic and so on. Make campus maps and add campus space data and attribute data; Using GIS spatial analysis function, combining teaching buildings, dining halls, dormitories, roads, etc. In order to increase the interaction with the user, the system also designs the functions such as personal user management, knowledge and delivery[4-5]. The optimal path analysis for campus roads is designed and implemented; According to the hot map, you can analyze the flow of people. The design implements the personal location real-time location query, the path navigation voice broadcast, the study room real-time query, the building location query; The design realizes the campus life function of the delivery of the express and the location of real-time location.

4. System function implementation

Based on the system function design, this system uses a SuperMap iDesktop 8 c software and SuperMap iServer 8 c software has carried on the original map matching, vector map, the layer style Settings, thematic map Settings and release, etc; Use SuperMap iMobile 8C SP2 for Android and baidu map Android SDK (Software Development Kit) v3.7.0 for secondary development; Call the SuperMap iClient for JavaScript interface and the baidu map HeatMap interface real-time hot map query. Using MVC(Model View Controller) architecture, Android, Servlet, Json, Php, Java, Xml, etc. As the client, server and data interactive development technology, using MyEclipse10 main.
development environment as the background, use Wamp auxiliary development boom to function integrated development environment, the background for Tomcat7 main server, server for Apache2.4 heat to generate real-time request. Use MySQL 5.6 as the system database.

4.1. Quick delivery
In view of such situation and we develop "fingertips disaster prevention", we develop the function of "speed take express", aimed at the north and the south campus students in disaster prevention institute of science and technology to express the great convenience. Students only need to use the spare time to release their own express information at any time. Each student can also be used as a help take delivery of the receiver, if you happen to be on the way to take delivery, you can order at any time, if the other party issued a reward, the two sides after completion of the deal approval, you also can get the rewards. This saves everyone's time and labor costs, but also creates a harmonious and loving campus atmosphere.

Click on the module to refresh the real-time SQL (Structured Query Language) query asynchronously for a few hours of delivery information. The user can click on the lower right corner of the red "+" to help to take delivery, by students at this time when help take express students click on the order, the Android client onCreat () to create events, onResume () for events, click on the focus and sends a request to the courierServlet server response, find to request courierServlet through Xml configuration files, and send the delivery to the client through Json status symbol of a variable.

4.2. Campus hot map
According to the hot map, you can see where the students in the school usually have more times in the number of times, and the number of students in the school can be changed by the number of students. Infer the students' daily life activities.

We developed the campus thermal map based on the Baidu map Android SDK. Because the collected GIS spatial data projection is the WGS84 coordinate system, we need to transform the projection coordinates into the Baidu coordinates (BD09), which is Baidu coordinates Baidu in the coordinates of Mars (domestic publishing of various map systems (including electronic form), must be used at least GCJ-02 coordinate system on the geographical location of the non-linear addition of the first encryption) based on the secondary encryption used after the coordinate system.

4.3. Transaction processing
Transaction management and students are closely related to daily life, through the practical application of Application, to provide users with the most efficient itinerary, a great convenience of the user's efficiency to save the user's work time. Through the BaiduMapNavigation class under the openBaiduMapWalkNavi (para, this) method to walk navigation Baidu map, according to the user specified two coordinates, passed DistanceUtil. GetDistance (p1, p2) method, the actual calculation of the two points Geographic distance, calculate an optimal route, display the route on the map, and provide you can use voice navigation.

5. Conclusion and prospect
The system uses Android technology to achieve the campus thermal map, self-study room inquiries, campus lectures, knowledge world, express speed, campus recruitment, campus weather and knowledge forums and other basic functions. In addition, the system interface is not particularly beautiful, in the future research and development will be further improved and optimized.

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