

# 基于 LBS 的 SNS 社交网站设计与实现

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**摘要:**以笔者参与某网站建设的工作背景为基础,利用 LBS,探讨了具有良好前景的 SNS 社交网站的设计与实现方法。在实际项目中,该方法降低了技术风险、建设成本和运行风险,缩短了建设周期,对从事相关工作的同行有重要的参考价值和借鉴意义。

**关键词:**SNS; LBS; 社交网站; 设计; 实现

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LBS 最早由美国明星互联网企业 Foursquare 所发明。来自艾媒市场咨询的数据显示,2010 年中国位置服务行业市场规模有望达到 9.98 亿元人民币。而预计到 2015 年,中国 LBS 个人“切客”应用市场总体规模将突破 70 亿元。LBS 的快速发展将带动 SNS 网站向移动互联终端迅速迁徙,这才是 LBS 要在中国取得成功的关键。本文设计实现的青年社区网络平台正是基于 SNS + LBS 构建,希望利用微博、个人空间、“签到”等时尚元素吸引青年,利用社交网络联系青年,利用门户网站引导青年,利用网络协作服务青年。

## 1 系统设计

“青年社区”不同于传统的网络社区,它通过嵌入式电子地图技术,以 LBS 形式,将网络社区丰富多彩的信息呈现在电子地图上,组织线上线下的互动,以及活动的发起与管理,电子地图采用栅格二维电子地图,应用架构见图 1。

技术路线是:根据各个用户的请求,封装数据请求,通过互联网发送到地理信息服务器,利用平台层模块解析请求数据以及应答 Web 请求;构建空间信息查询条件,从数据库中读取符合条件的地理空间数据和社区业务属性数据;转换、封装结果数据,利用数据分发将数据传送到应用端对结果进行解析和显示,最终为各个用户群服务。

## 2 关键技术

### 2.1 网络服务调用技术

网络服务是指在社区网络上运行的、面向服务的、基于分布式程序的软件模块,网络服务采用 HTTP 和 XML 等互联网通用标准,可在不同的地方通过不同的

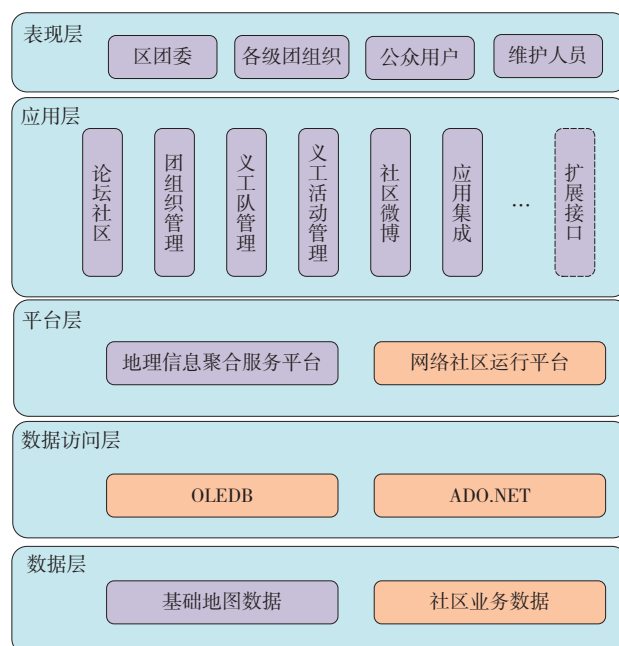


图 1 应用架构示意图

终端设备访问 Web 上的数据。瓦片调用的程序发布成网络服务的形式,网络用户可以通过调用网络服务来获取电子地图所需的瓦片数据。

### 2.2 Objective-C 版地图发布技术

Objective-C 是苹果 iOS 上开发的首选语言;是 ANSI C 的超集,扩展了 C 语言使它具备面向对象设计的能力,一方面可以实现底层系统编程,另一方面可以支持利用动态架构进行开发。Objective-C 版地图发布技术是以 ArcGIS for iOS 2.0 核心技术为基础,通过反向解析其内部构造机制,并结合自身地图成图机制延伸而出的。该技术能够发布各种自定义格式的地图数据,实现 iPad、iPhone 等设备的地图展示。

### 2.3 分布式地理信息系统技术

分布式地理信息系统 (DGIS) 是 Internet GIS/

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WebGIS 的重要发展方向。DGIS 利用分布式技术的优势与特点, 将 GIS 通过分布式的分散处理计算, 使得用户可利用各种终端(如普通 PC、移动 PC、手机、PDA 以及其他数字终端), 通过 Internet 或无线通信网络访问 GIS 服务器集群, 获得服务功能和地图数据, 而不必关心应用底层的跨平台、数据库异构、终端类型等问题, 实现了应用的交互协作性。分布式位置服务(DLBS)与 DGIS 是一种泛化关系, 即 DGIS 的共性可移植到 DLBS 应用中, 另外除了继承 DGIS 的性能特点外, 也具有自身的特点, 如终端类型、资源的限制、基于无线网络等。

### 3 网络功能设计与组织结构

SNS 网络社区包含门户网站、主题论坛、个人空间、微博、排行榜等网络元素, 同时开放登录接口, 通过与其他 SNS 社交网站(新浪网、QQ 空间)的链接, 以扩大社区影响力。网络社区风格趋于时尚化、年轻化, 以吸引青年的参与及活跃度为目的, 融入了积分系统和任务系统, 通过丰富多样的网络元素吸引广大青年积极参与; 通过积分系统调动青年的活跃度, 通过任务系统引导并服务于青年群体, 如图 2 所示。



图2 “青年社区” 首页示意图

1) 嵌入式地图服务。“青年社区”最大的特色是将 SNS 与 LBS 很好地结合起来, 网络社区用户发表的微博、日志、创建的主题活动, 都能够通过电子地图实时发布, 如图 3。结合电子地图, 社区用户能知道身边的人在聊什么、玩什么、有什么主题活动可以参与, 有助于增强青年的凝聚力。

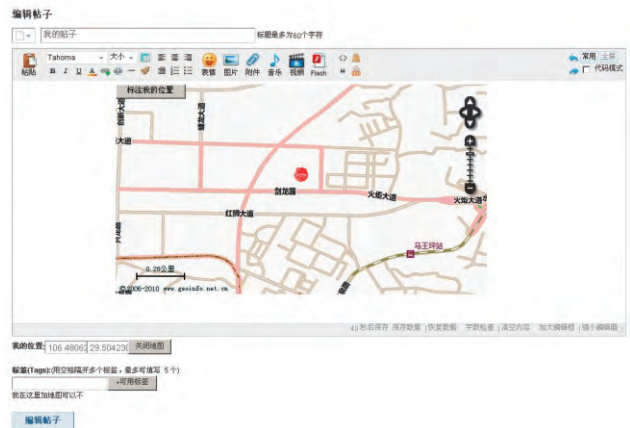


图3 嵌入式地图示意图

2) 主题网络应用。“青年社区”软件架构支持网络应用的管理(新增、删除), 由社区提供健康、有趣的互动小游戏, 社区用户以“添加应用”的形式加入自己喜欢的互动应用, 并融入 SNS 的积分系统, 通过参与 SNS 线上线下活动、发微博等方式(图 4、图 5), 换取积分以获得更好的互动体验。



图4 发微博示意图

3) 青年就业创业服务。通过对 SNS 社区中录入的个人求职简历与招聘信息进行匹配, 面向青年实现工作推介; 青年也可在网上申请创业贷款等政策性服务。

4) 团组织管理。对团组织和团员进行编辑、新增、删除等操作(见图 6)。不同账号有不同的管理权限, 管理员只能对本级或下级组织机构和团员信息进行管理操作。





图 5 关注和参加线上线下活动示意图

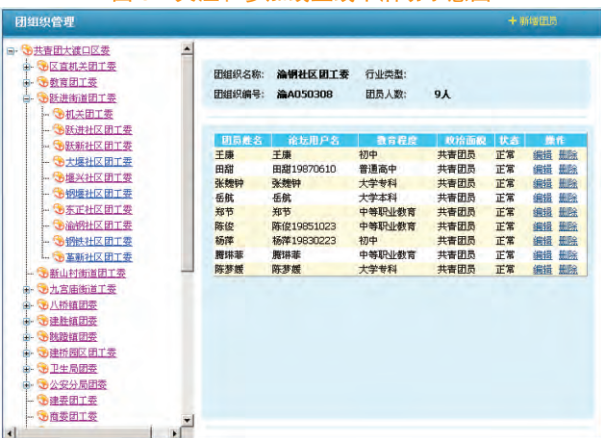


图 6 团组织管理示意图

5) 青少年活动中心, 展现青少年文化、在线学习、校外培训、科普体验等信息。

## 4 结 语

LBS 是一个集多种信息技术于一体的产物, 基于 LBS 设计的 SNS 社交网站将原本不相交的成熟 SNS 与 LBS 高效地结合起来, 融入到了新的互联网应用领域。在实际项目中, 既降低了技术风险, 缩短了建设周期, 降低了建设成本和运行风险; 又在广大受众, 尤其是青少年中获得了较高的支持, 规范了青少年工作的形式, 丰富了青少年活动的内容, 取得了较好的社会应用效果。

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## 5 结 语

大数据时代, 测绘保障已经不是简单的提供数据服务, 而是将数据转化为信息, 从信息中提取知识, 最终为用户提供智能服务。地理舆情是通过对样本数据进行分析而得出具有时空特征及发展规律的情报产品, 是测绘在人文社会空间和网络空间的典型应用。随着科技的不断发展, 无论从网络安全分析、研究领域的拓展, 还是测绘保障的需求, 地理舆情都是大数据时代地理空间信息科学领域研究的重要内容。

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**Research on Topographic Map Data Regularizing and Adaptive Updating**

by ZHANG Xinchang

**Abstract** The regularizing and updating of database are two main processes in updating of topographic map data, which is a kind of fundamental spatial data. A framework of topographic map data regularizing and updating was proposed in this paper. In order to transform CAD format data to GIS data efficiently and accurately, we standardized CAD format data of topographic data by means of feature coding, topology checking and it's editing and data conversion. After the conversion of CAD format data, we proposed a highly efficient method of change detection based on the grid-partitioning of data, and employed it to extract changing elements and update them to database. The test results show that the proposed adaptive updating method can efficiently discover changed elements and update them.

**Key words** topographic map, data regularizing, change detection, incremental updating (Page:1)

**Analysis of the Concept and Related Technologies of Geographical Public Opinion**

by ZHANG Wei

**Abstract** This paper systematic introduced geography public opinion, from the basic theory, technical support, conceptual analysis, definition, classification and framework and so on. The purpose of this research was to study the framework of geography public opinion, and laid the foundation for network environment research of geography public opinion during Big Data Era.

**Key words** geographic public opinion, concept, visual analysis (Page:5)

**Takeoff and Landing Safety of Micro UAV in Complex Mountainous Environment and Its Application**

by YUAN Chao

**Abstract** According to the integration of technology and prototype development, this paper proposed an effective strategy for the key technical problems of takeoff, landing, and track planning of Micro UAV in mountainous region. The paper validated the stable and effective of study result by many times flight test. This study has an important significance for the application of UAV in the field of national conditions census, resource survey, and emergency rescue.

**Key words** micro UAV, mountainous environment, takeoff and landing safety, aerial photography application (Page:7)

**Design and Implementation of SNS Social Website Based on LBS**

by LIU Wanhua

**Abstract** Taking the author participated in a website construction as the foundation, this paper designed and implemented a SNS social website based on LBS, which has good prospects. In actual project, the method reduced the technology risk, construction cost and operation risk, and shortened the construction cycle. The study would hope to the colleagues engaged in relevant work has important reference value and significance.

**Key words** SNS, LBS, social website, design, implementation (Page:10)

**Design and Application of Internet of Things Service Platform for Smart City**

by ZHANG Xi

**Abstract** This paper researched the key technologies of information transmission and exchange on Internet of Things, and designed an Internet of Things service platform for Smart City. The real-time data acquisition, mass data storage and distributed data service of mass sensors were realized for Smart City. On this basis, the application in connected car proved that the platform design is scientific and practical.

**Key words** Internet of Things, sensor network, Smart City (Page:13)

**Research on Geographic Information Data System in Smart City**

by JIANG Aihua

**Abstract** In this paper, according to the functions of various geographic information data in the urban ecological system of Smart City, the role of the geographic information data in the Smart City was divided into four data groups which were the basic geographic information framework data group, the service provider data group, the service consumer data group and the management data group. And then, the role, content and requirements of each group of data in Smart City data system were discussed and analyzed.

**Key words** Smart City, geographic information data, service provider, service consumer, data group (Page:15)

**Extraction of Hyperspectral Remote Sensing Data Altered Mineral and Its Features Analysis in Sena**

by YUE Yongzheng

**Abstract** Taking Sena, in the west of Tibet Bangong Lake-Nujiang River metallogenic belt and the east of Duobuza favourable metallogenic province, as research area, in order to get the effective information of the research area, we used Hyperion remote sensing data to extract the altered mineral. And then, we extracted three kinds of mineral spectrum components: limonite, chlorite and kaolin, and used the SAM method to mineral mapping. The field validation results show that experimental result was basically in accord with the actual situation, and the alteration zoning characteristics is significant. According to the alteration zoning distribution, we delimited two porphyry deposit key exploration area.

**Key words** Bangong Lake-Nujiang River metallogenic belt, Hyperion, hyperspectral remote sensing, altered mineral, Sena Area (Page:18)

**Quality Evaluation of High Resolution Remote Sensing Images Based on Rule Base**

by LI Haolin

**Abstract** To solve the problem of high resolution remote sensing images quality evaluation lack of objective, comprehensive and quantitative method, this paper proposed a quality evaluation method based on rule base, and built three indicators, such as the gray statistic features, texture features and image sharpness, as well as the comprehensive quality evaluation model. Then, some experiments on high resolution remote sensing images were made to verify the validity of the proposed method. Results show that the proposed method is very accurate and objective for quality evaluation.

**Key words** high resolution, image quality evaluation, rule base, texture feature, gray statistical characteristic (Page:22)

**Research on Hyperspectral Remote Sensing Images Classification Based on K-means Clustering**

by ZHAO Jie

**Abstract** In this paper, we studied two different unsupervised band selection methods and three different similarity metrics based on K-means clustering. By comparing the classification results, we found that using Uniform Spectral Spacing(USS) as band selection method and the Euclidean distance as the similarity metric of K-means classification method, the classification accuracy of the result was higher with shorter computation time.

**Key words** hyperspectral, unsupervised band selection, K-means clustering, similarity metric (Page:26)

**Filtering Method of Urban LiDAR Point Cloud Based on Slope and Region Growing Algorithm**

by ZHANG Ningning

**Abstract** Based on analyzing the principle of slope-based filtering method, this paper introduced the region growing algorithm to improve the filtering method. Partial reference samples published by ISPRS were tested. The results were compared with Rogger's and Sithole's slope-based filtering algorithms. The experimental results show that this method can reduce the type I error and be used to filter the urban LiDAR points cloud data with buildings.

**Key words** slope, region growing, LiDAR, filtering (Page:30)

**Discussion on Quality Inspection Techniques of Surface Coverage Classification Data in Hubei Province**

by HE Dejun

**Abstract** Surface coverage classification is an important part of the geographical conditions census result data, and is also the basic data source of statistical analysis. In this paper, combining the characteristics of the geographical conditions census in Hubei Province and some experiences in the actual inspection, we discussed the main content and method of the quality inspection of surface coverage classification information collection results comprehensively. And then, we explored the key technologies of the results of data quality inspection process.

**Key words** geographical conditions census, surface coverage, quality inspection (Page:33)

**Key Techniques of Geographical Conditions Census and Implementation Strategy**

by LING Xiaochun

**Abstract** This paper discussed the implementation strategy of geographical conditions census key techniques, such as images acquisition and processing, DEM refinement, automatic interpretation technology application and the quality software process implementation. And then, the paper introduced the work method of DEM refinement and compared the efficiency of several