Розглянуто особливості популярних сервісів соціальних мереж, описані найбільш популярні технології для створення такого роду сервісів. Описано веб-сервіс, який був створений для демонстрації результатів дослідження

Ключові слова: веб-сервіс, соціальна мережа, розробка

Рассмотрены особенности популярных сервисов социальных сетей, описаны наиболее популярные технологии для создания такого рода сервисов. Описан веб-сервис, который был создан для демонстрации результатов исследования

Ключевые слова: веб-сервис, социальная сеть, разработка

Features of social network services are discussed; the most popular technologies to create such kind of services are listed. Web-service for demonstration of analysis results is reviewed

Key words: web-service, social network, development

METHODS FOR BUILDING GEO-SOCIAL SYSTEMS IN THE INTERNET. SERVER APPLICATIONS TECHNOLOGIES

T. Shatovska
Кандидат технических наук, профессор*
Контактный тел.: (057) 702-16-46
E-mail: shatovska@gmail.com

V. Kauk
Кандидат технических наук, доцент*
Контактный тел.: (057) 702-13-85
E-mail: victor.kauk@gmail.com

D. Vlasenko*
Контактный тел.: 068-641-56-57
E-mail: dmytro.vlasenko@gmail.com
*Кафедра ПО ЭВМ
Харьковский национальный университет радиоэлектроники
пр-т Ленина, 14, г. Харьков, Украина, 61166

1. Introduction

A social network service focuses on building and reflecting of social networks or social relations among people, e.g., who share interests and/or activities. A social network service essentially consists of a representation of each user (often a profile), his/her social links, and a variety of additional services. Most social network services are web based and provide means for users to interact over the Internet, such as e-mail and instant messaging. Although online community services are sometimes considered as a social network service in a broader sense, social network service usually means an individual-centered service whereas online community services are group-centered. Social networking sites allow users to share ideas, activities, events and interests within their individual networks.

A need of communication in the modern world is urgent as never before. Though every person is surrounded by a large amount of people, finding a like-minded person is still not easy. This task can be successfully solved by social network services that unite people on the principle of common past, professional motives, etc. Requirements of users to services grow together with the amount of social network services. Nowadays simple instant messaging system is not enough; people want to get more services to enrich their communication. That is why games, blogs and a photo hosting begin to appear in social network services.

Social network services as a phenomenon appeared with the development of the concept "Web 2.0" and changed the Internet completely. The peak of popularity of social network services was in 2003 – 2006. From the very beginning they were uniting people by the nostalgic factor, e.g., by the wish to talk with former schoolmates and old friends. Social network services that were uniting people just by the fact of a common past were very successful. However, this niche was occupied very quickly. At the same time there were still a lot of spheres of life that were rapidly filled with social network services based on a professional alliance (linkedin. com), passion for music (last.fm), passion for painting and photography (devianart.com), etc.

2. Social network services overview

linkedin.com
LinkedIn is a business-oriented social networking site. Founded in December 2002 and launched in May 2003, it is

mainly used for professional networking. As of 11 February 2010, LinkedIn had more than 60 million registered users, spanning more than 200 countries and territories worldwide.

The purpose of the site is to allow registered users to maintain a list of contact details of people they know and trust in business. The people in the list are called Connections. Users can invite anyone (whether a site user or not) to become a connection.

LinkedIn also allows users to research companies with which they may be interested in working. When typing the name of a given company in the search box, statistics about the company are provided. These may include the ratio of female to male employees, the percentage of the most common titles/positions held within the company, the location of the company's headquarters and offices, or a list of present, past, and former employees.

facebook.com

Facebook is a social networking site that is operated and privately owned by Facebook, Inc. Since September 2006, anyone over the age of 13 with a valid e-mail address can become a Facebook user. Facebook's target audience is more for an adult demographic than a youth demographic. Users can add friends and send them messages, and update their personal profiles to notify friends about themselves. Additionally, users can join networks organized by workplace, school, or college. The website's name stems from the colloquial name of books given to students at the start of the academic year by university administrations in the US with the intention of helping students to get to know each other better.

flickr.com

Flickr is an image and video hosting website, web services suite, and online community. In addition to being a popular website for users to share and embed personal photographs, the service is widely used by bloggers to host images that they embed in blogs and social media. As of October 2009, it claims to host more than 4 billion images.

digg.com

Digg is a social news website made for people to discover and share content from anywhere on the Internet, by submitting links and stories, and voting and commenting on submitted links and stories. Voting stories up and down is the site's cornerstone function, respectively called digging and burying. Many stories get submitted every day, but only the most Dugg stories appear on the front page. Digg's popularity has prompted the creation of other social networking sites with story submission and voting systems. The website traffic is ranked 100th by Alexa.com as of April 2, 2010.

twitter.com

Twitter is a social networking and micro blogging service that enables its users to send and read messages known as tweets. Tweets are text-based posts of up to 140 characters displayed on the author's profile page and delivered to the author's subscribers who are known as followers. Senders can restrict delivery to those in their circle of friends or, by default, allow open access. Since late 2009, users can follow lists of authors instead of following individual authors. All users can send and receive tweets via the Twitter website, Short Message Service (SMS), or external applications (notably including those developed for smartphones). While the service itself costs nothing to use, accessing it through SMS may incur phone service provider fees. The website currently has more than 100 million active users worldwide.

Social network services market is saturated and therefore increases a competition between these services. As in any business, one of the key methods of competition is innovation. These innovations appear in the creation of new social networking features, all of these features are often implemented by users because social networks offer API (Application Programming Interface, which allows developing applications that work with these networks) for developers. In addition, a personalized social networking for the specific user should be noted, when people come to social networks and see only what they want, information is offered according to their interests, which were identified previously, their friends are within one click from them, etc.

The trend for new social networks can be viewed from the other side. Now, social networks are becoming substitutes for other sites. This is especially noticeable in the professional media; social networks are the threats to these companies. And chances are the media has already understood that and is prepared to defend, major western media produce social functionality for their projects and make attempt to interbreed professional online publishing and social networking.

Development of social networks can be divided into 3 parts: the first - social networks of mid-nineties, pioneers with the simplest functionality, the second - social networks with a richer functionality (from 2000s until today) and the third part - social networks that solve specific problems: search for employees, games, information, etc. According to this theory, development of social networks nowadays is at the third stage.

3. Overview of the most popular technologies for server applications development

Java

JSP

JavaServer Pages (JSP) is a Java technology that helps software developers serve dynamically generated web pages based on HTML, XML, or other document types. Released in 1999 as Java's answer to ASP and PHP, JSP was designed to address the perception that the Java programming environment didn't provide developers with enough support for the Web.

JSP allows Java code and certain pre-defined actions to be interleaved with static web markup content, with the resulting page being compiled and executed on the server to deliver an HTML or XML document. The compiled pages and any dependent Java libraries use Java bytecode rather than a native software format, and must therefore be executed within a Java virtual machine (JVM) that integrates with the host operating system to provide an abstract platform-neutral environment.

JSP syntax is a fluid mix of two basic content forms: scriptlet elements and markup. Markup is typically standard HTML or XML, while scriptlet elements are delimited blocks of Java code which may be intermixed with the markup. When the page is requested the Java code is executed and its output is added with the surrounding markup to create the final page. Because Java is a compiled language, not a scripting language, JSP pages must be compiled to Java bytecode classes before they can be executed, but such compilation generally only occurs once each time a change to the source JSP file occurs.

The JSP syntax adds additional XML-like tags, called JSP actions, to invoke built-in functionality. Additionally, the technology allows for the creation of JSP tag libraries that act as extensions to the standard HTML or XML tags. JVM operated Tag libraries provide a platform independent way of extending the capabilities of a web server.

PHP

PHP: Hypertext Preprocessor is a widely used, general-purpose scripting language that was originally designed for web development to produce dynamic web pages. For this purpose, PHP code is embedded into the HTML source document and interpreted by a web server with a PHP processor module, which generates the web page document. As a general-purpose programming language, PHP code is processed by an interpreter application in command-line mode performing desired operating system operations and producing program output on its standard output channel. It may also function as a graphical application. PHP is available as a processor for most modern web servers and as standalone interpreter on most operating systems and computing platforms.

.NET Framework

ASP.NET

ASP.NET is a web application framework developed and marketed by Microsoft to allow programmers to build dynamic web sites, web applications and web services. It was first released in January 2002 with version 1.0 of the .NET Framework, and is the successor to Microsoft's Active Server Pages (ASP) technology. ASP.NET is built on the Common Language Runtime (CLR), allowing programmers to write ASP.NET code using any supported .NET language. The ASP.NET SOAP extension framework allows ASP.NET components to process SOAP messages.

ASP.NET MVC

The Model-View-Controller (MVC) architectural pattern separates an application into three main components: the model, the view, and the controller. The ASP.NET MVC framework provides an alternative to the ASP.NET Web Forms pattern for creating Web applications. The ASP.NET MVC framework is a lightweight, highly testable presentation framework that (as with Web Forms-based applications) is integrated with existing ASP.NET features, such as master pages and membership-based authentication.

MVC is a standard design pattern that many developers are familiar with. Some types of Web applications will benefit from the MVC framework. Others will continue to use the traditional ASP.NET application pattern that is based on Web Forms and postbacks. Other types of Web applications will combine the two approaches; neither approach excludes the other.

The MVC framework includes the following components:

1. Models. Model objects are the parts of the application that implement the logic for the application's data domain. Often, model objects retrieve and store model state in a database.

2. Views. Views are the components that display the application's user interface (UI). Typically, this UI is created from the model data.

3. Controllers. Controllers are the components that handle user interaction, work with the model, and ultimately select a view to render that displays UI. In an MVC application, the view only displays information; the controller handles and responds to user input and interaction.

The MVC pattern helps to create applications that separate the different aspects of the application (input logic, business logic, and UI logic), while providing a loose coupling between these elements. The pattern specifies where each kind of logic should be located in the application. The UI logic belongs in the view. Input logic belongs in the controller. Business logic belongs in the model.

WCF

Windows Communication Foundation (WCF) is a framework for building service-oriented applications. Using WCF, a developer can send data as asynchronous messages from one service endpoint to another. A service endpoint can be part of a continuously available service hosted by IIS, or it can be a service hosted in an application. An endpoint can be a client of a service that requests data from a service endpoint. The messages can be as simple as a single character or word sent as XML, or as complex as a stream of binary data. A few sample scenarios include:

1. A secure service to process business transactions.

2. A service that supplies current data to others, such as a traffic report or other monitoring service.

3. A chat service that allows two people to communicate or exchange data in real time.

While creating such applications was possible prior to the existence of WCF, WCF makes the development of endpoints easier than ever. In summary, WCF is designed to offer a manageable approach to creating Web services and Web service clients.

4. The goal

To develop a service that allows publishing user's location and tracking other user's locations who allowed publishing their locations, sending and receiving short text messages and scheduling meetings.

The service comprises three main parts:
1. API
2. Web application
3. Client's mobile application
The service main functions are:
1. Authentication and authorization
2. Tracking user's location using GPS
3. Publication of user's location
4. Tracking other user's locations
5. Text messaging
6. Scheduling meetings
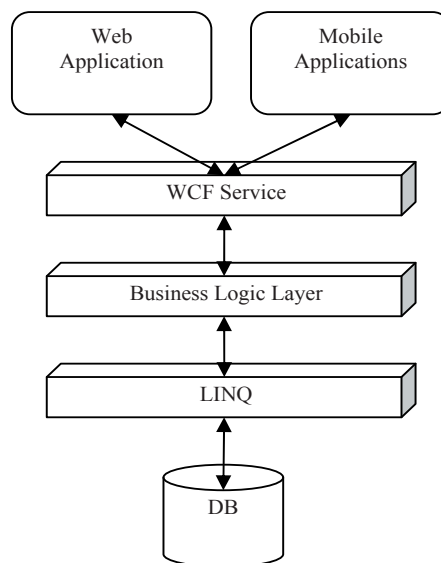Fig. 1. shows general architecture.

Fig. 1. General architecture

5. Conclusion

The work has resulted in investigating existing social systems, features that unite them and features, which distinguish them. Technologies used for building geo-social systems, among which ASP.NET MVC and WCF should be noted, have been researched. Mechanism of interaction with cartographical systems by the example of Bing Maps has been studied. In addition, technologies of fixing a position in cellular communication networks have been researched. Prototype of the geo-social system comprising three parts - web application, web services and mobile application, has been developed.

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СТІЙКІСТЬ МУЛЬТИФРАКТАЛЬНИХ СПЕКТРІВ ВІДНОСНО ЗМІНИ ЯСКРАВОСТІ, ПОВОРОТУ І МАСШТАБУ ЗОБРАЖЕННЯ

Проведено перевірку спектра мультифрактальних характеристик до перетворення зображення: зміни яскравості, повороту відносно центра і масштабування. Приведені графіки стійкості відносно кожного перетворення

Ключові слова: мультифрактальна параметризація, аналіз зображень, яскравість, поворот, масштабування, стійкість

Проведена проверка спектра мультифрактальных характеристик относительно преобразования изображения: изменение яркости, поворот относительно центра и масштабирование. Показаны графики стойкости относительно каждого из преобразований

Ключевые слова: мультифрактальная параметризация, анализ изображений, яркость, поворот, масштаб, стойкость

Verification of spectrum of multifraktal descriptions is conducted in relation to transformation of image: change a brightness, turn in relation to a center and down-scaling. The graphs of firmness are rotined in relation to each of transformations

Key words: multifractal parametrization, analysis of images, brightness, turn, scale, firmness

В.В. Лотиш
Кандидат технічних наук, доцент*
Контактний тел.: 8-050-378-31-49
E-mail: lotpost@gmail.com

П.В. Разкевич
Молодший спеціаліст з автоматизації, магістрант*
Контактний тел.: 8-097-700-39-92
E-mail: pitroua@yandex.ru
*Кафедра автоматизованого управління виробничими процесами
Луцький національний технічний університет
вул. Потебні, 56, м. Луцьк, Україна, 43018

1. Вступ

Рівень сучасної науки дозволяє опрацьовувати значні обсяги інформації, що сприяє появі нових методів та підходів до аналізу складних структур природи. Одним з таких напрямків є цифровий аналіз зображень досліджуваних об'єктів. Цей напрямок дозволяє виявляти приховані та складні процеси у природних структурах.

При дослідженні природних структур за не завжди вдається отримати фото досліджуваного об'єкта із однаковим рівнем яскравості, масштабом або кутом повороту, що суттєво впливає на точність аналізу. Тому постає потреба у перевірці результатів обробки на стійкість до перетворень.

Перевіримо на стійкість метод мультифрактальної параметризації.