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M-stock: Efficient stock monitoring for mobile users

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Abstract

The emergence of sophisticated and powerful mobile devices with impressive computing capabilities and storage capacity paves the way for an era of advanced mobile-based applications. Monitoring of time-critical data, process control, and security are possible candidate applications. In this work we propose a stock monitoring system that utilizes mobile phones. The system was designed to provide an alternative to costly GPRS connections for stock market traders. The system grants real-time monitoring of stock information through a user-friendly and easy to use GUI with plenty of useful features. The system was implemented by combining various Java technologies, specifically J2ME and J2EE. It was tested using the Dubai Financial Market with favorable results.

Keywords: Mobile; Stock-monitoring; GPRS; J2ME

1. Introduction

The rapid spread of mobile phones use inspires new applications that integrate hardware, software, and telecommunication technologies. Recently, these devices were utilized in a number of applications for monitoring and control purposes [1–5]. Mobile phones are becoming more powerful and sophisticated and have evolved to full-scale internet enabled computing devices. Smart phones' emerging capabilities are fueling a rise in the use of mobile phones as input devices to such resources as situated displays, vending machines, and home appliances. Mobile phones' prevalence gives them great potential to be the

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default physical interface for ubiquitous computing applications. This would provide the foundation for new interaction paradigms [6]. In recent years, mobile marketing (M-Marketing) has started to emerge and gain acceptance [7,8]. Yet again, this is made possible because of the explosive growth of mobile devices, coupled with advances in the information, communication fields, and mobile technologies. The advantages of having direct access to a device carried by consumers most of the time such as their cell phones are endless from a marketing point of view. Hence, one can argue that mobile phones are, and will continue to increasingly become an essential component of our daily life, and the ever increasing power of these devices will pave the way for the development of very sophisticated applications in the near future.

In this paper, we report on the design and implementation of a stock monitoring platform using mobile phones. In recent years, there has been a growing interest among individuals in stock trading, especially in emerging markets such as the Dubai Financial Market (DFM) [11]. A common practice in these markets is for customers to call brokerage firms seeking advice, requesting transaction execution, or simply to get the price of certain stock. Sometimes, users of these firms may wait for long period of time before being provided with access to a broker. Some firms allow the users to access stock information via the web. Despite the easiness of this approach, the user is restricted to places where an internet connection and a computer are available. Advanced mobile phones can connect to the internet via general packet radio service (GPRS), and hence mobile users can access the stock information at any time from anywhere (provided there is mobile service coverage). This approach also has several problems. First, not all websites can be displayed on mobile phone browsers. This can restrict the information retrieved by the user. Second, users are forced to download all the website content which is likely to include unused information. Third, stock prices are continuously changing and websites displaying stock information are always updated. Downloading large amount of stock data can be inconvenient for mobile users since GPRS is known to be both, slow and expensive.

Even if we assume that customers can have access to the internet from anywhere at any time using a GPRS connection, since the customer is charged per kbytes, the GPRS connection becomes very costly with every access to a website like Dubai's Financial Market with plenty of data to download. Additionally, with a normal GPRS connection, if the customer is interested in stock information from different stock markets, he/she has no other choice other than browsing through each website. This solution is costly, time consuming, and inconvenient; in addition to this, the customers' stocks of interest might be only few out of all the stocks available at the website. Note that some websites offer a customized *my stocks* page where individual preferences for stock watching and email alerts can be set up. However, these pages are not efficient for mobile phone browsing and will be costly and slow to download on a mobile phone.

Motivated by the aforementioned factors, we propose an optimized and efficient approach to stock monitoring using mobile phones. The primary goal is to provide a practical alternative to costly GPRS connections for users who use their mobiles to monitor the stock market. The proposed system has a user-friendly and easy to use graphical interface that allows users to create portfolios for their preferred stocks. The stocks selected can be from a single/multiple financial market(s). The user can then retrieve the selected portfolio, hence, downloading only few bytes constituting the required information about the selected stock. In turn, this process reduces the connection costs