KOREAPP: AN ANDROID APPLICATION FOR KORE UNIVERSITY OF ENNA

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Abstract

Everyday life is increasingly characterized by the presence of mobile devices through which it is possible to do many things. KoreApphas been developed to extend the already present iOS based application "Kore University" to all Android devices. The main aim of the application is to provide to students, professors, and university staff, all services wherever they are, making information search faster.

Keywords: Android, KoreApp, Geolocation, Real-time notifications

I. OTHER UNIVERSITY APPLICATIONS

A group of researchers and students of Kore University of Enna, developed the first official application of an italian university on iOS for educational services provided to students and university staff. Kore University [1] is available for iPad, iPhone and iPod touch, and can be freely downloaded from the AppStore. It has already been downloaded by several hundred of users, and is constantly updated, to offer always new services. The University of Foggia developed a mobile application called iUnifg, designed for mobile devices with iOS and Android, that allows students to easily book exams and find information about their career, programs and lessons.

eCampus is the mobile app of University of Phoenix. All students with an iPhone, iPad or Android can access and respond to messages in real-time from sent by their instructor and learning team, participate in discussions, view, edit and save drafts of their participation comments. Texas University realized an app for student that gives users access to campus maps, GPS-driven location help, faculty and staff directories that launch the phone dialer, course lists that display class descriptions, times, and locations. The app feeds news and events. It's available in six languages: English, Arabic, Dutch, Japanese, Portuguese, and Spanish.

II. THE ANDROID WORLD

Android is a Linux-based operating system for mobile devices like smartphone and tablet computers. It has been developed by the Open Handset Alliance managed by Google [2]. The unveiling of the Android distribution in 2007 was announced with the founding of the Open Handset Alliance, a consortium of 86 hardware, software, and telecommunication companies devoted to advancing open standards for mobile devices [3]. At the beginning of year 2012, there were more than 450,000 apps available for Android, and the estimated number of applications downloaded from the Android Market on December 2011 exceeded 10 billion [4 – 6]. Android consists of a kernel based on Linux, with middleware, libraries and APIs written in C language and software running on a framework which includes Java-compatible libraries based on Apache Harmony. Android uses the Dalvik virtual machine with just-in-time compilation to run Dalvik dex-code (Dalvik Executable) which is usually translated from Java bytecode [7]. The main hardware platform for Android is the ARM architecture. There is support for x86 architectures from the Android x86 project [8], and Google TV uses a special x86 version of Android. Developers who want to program on Android should know Object Oriented paradigm. Otherwise, the main difference from Java is the use of XML files, needed to control graphics and software behaviour. Great importance is given to the problem of graphic resolution. Unlike iOS, there are many devices that use the Android operating system. The standard smartphones resolution is HVGA or "Half-Size Video Grafic Array" (320 x 480 pixels), but only 75% of devices on market have this resolution. Android developers have grouped screens size in a grid based on the combinations of resolution and pixel density. (Fig. 1)

While developing a graphical interface for Android, it's important to consider pixel density (screen size is less important) using an independent pixels measurement called density-independent pixels.

"A Density-independent pixels (dp) is equivalent to 1px on a 160 dpi screen, which is the basic density referring to a medium density display. At runtime, dimensions are scaled according to dp specified and the actual resolution." To better understand, 1 pixel = DP * (DPI / 160) [9].

	Low density (120), *ldpi*	Medium density (160), *mdpi*	High density (240), *hdpi*	Extra high density (320), *xhdpi*
Small screen	QVGA (240x320)		480x640	
Normal screen	WQVGA400 (240x 400) WQVGA (240x432)	HVGA (320x480)	WVGA (480x800) WVGA854 (480x854) 600x1024	640x960
Large screen	WVGA800 (480x800) WVGA854 (400x854)	WVGA800 (480x800) WVGA854 (480x854) 600x1024		
Extra large screen	1024x600	WXGA (1280x800) 1024x768 1280x768	1536x1152 1920x1152 1920x1200	2048x1536 2560x1536 2560x1600

Fig. 1. Combinations between resolution and pixel density

Furthermore, developers have to consider that currently there are 15 Android versions and, of course, the various libraries are not compatible with all of them. It is programmer responsibility to write applications compatible with OS not upgraded. Android provides the opportunity to specify the minimum operating system version which must be installed, inserting the string into the file Manifest.xml:

"uses-sdk android:minSdkVersion=*"6"*

Fig. 2. KoreApp splash screen

III. KORE UNIVERSITY ON ANDROID

As already mentioned, the application was created to extend the iOS version (Kore University), to all users with Android devices. KoreApp is not a simple copy of Kore University "translated" for Android. It is a new program. It has been developed, in a different language, to offer the same services provided by the iOS version to all Android users. A light graphic, different from the standard dark tones of Android, has been chosen in order to make faster and relaxing data search. The user launches the application and, after a brief introductory splash screen (Figure 2), can immediately select faculty and its related subservices like list of professors, news of individual courses, departments geolocation and others functions. For each course, an individual page has been created (Figure 3). Every Android device is provided by a menu button, that activates a floating bar, through which it's possible to access to main application.
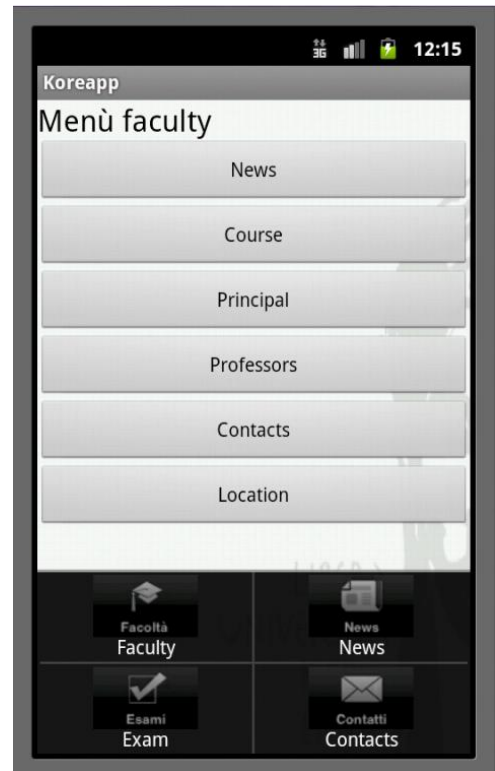

Fig. 3. Submenu faculty

KoreApp is written to comply with habits of Android users. To this end, a drop down menu has been implemented. It provides the access to four categories of information: Faculty, News, Contacts, Exams. This menu can be called from any application screen, ensuring a complete user navigability (Fig. 4).

Fig. 4. Drop down menu

News section provides news from university website. Also entering in a specific course, it's possible to read its information (Fig. 5). Service provided is updated in real-time. Furthermore, through

the application all contacts (phone or email) of university staff are available. Course pages are divided into specific categories, for example, for every faculty there is the list of teachers, where with a simple click on the name, you can write an email (Fig. 6), using your account or, when available, call the office directly.
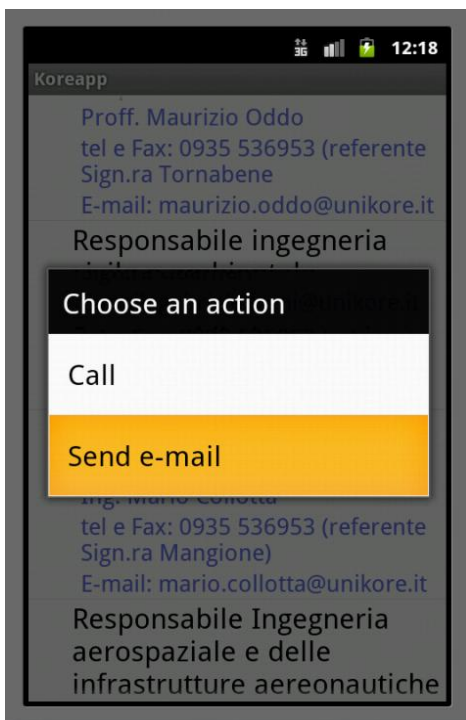

Fig. 5. Telematic Engineering News

Fig. 6. Example of selection on docenti's page

Finally, a last important function of KoreApp is given by geolocation. Through through google Api maps, it's possible to view all university departments location, and find the fastest way to reach them by foot, by car or by public transportation means.

IV. CONCLUSIONS AND FUTURE WORKS

Considering the large number of devices with Android OS, several tests with different devices have been conducted. This allowed to fix several bugs, mainly related to graphics or authorizations. For example, in the first version, many views were only partially visible. Thanks to a careful study of scroll views behaviour, it has been possible to make visible all application screens, both in landscape and portrait, even in presence of images, and in any device. In the next version, we will certainly try to add new and better features, such as geolocation for each office, or the ability to access their careers without going through the web view. An additional feature of the application, may be to synchronize with the tracking service of the University by public transportation (as soon as it becomes operational), so it will be possible to know bus arrival times. Android and its users are a great community with new followers everyday.

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