Future Practicability of Android   Application Development with New Android   Libraries and Frameworks

Shruti Mukherjee , Ishani Mondal
Computer Science and engineering
Narula Institute of Technology, Institute of Engineering and Management

Abstract: **Today we are in the major technological verge and in this situation we have to choose a side from PC devices and Mobile devices. As known from the market reviews users of different ends mostly prefer Mobile devices for their daily usage and because of that mobile technology is growing at a vast range and very rapidly. And the most triggered software of this technology we all know is Android .The possibility or future scopes for Android are beyond imagination. The large and speedy growth of Android always makes Developers work in different aspects and explore more and more about this technology. In This paper I propose the future of Android Development on the prospect of Different Android Frameworks and Libraries currently available at the market which are constantly helping the developers to work more and more on this particular platform with their own styles. This paper also contains differential diagnosis of those Frameworks in respect to their usages and other different possibilities. So that it can help developer more into Android and help it grow bigger and better.**

Keywords: **Android, Android Frameworks, Android Frameworks in application developments, Android app development.**

I. INTRODUCTION

Android is a most powerful mobile platform and it powers hundreds of millions of mobile devices in more than 190 countries of the world. Android is a fully power packed operating system that provides strong base to the world supporting lakhs of applications and games for android users as well as an open marketplace supporting Android App Development. It gives you a single and a unique application model which enables you to deploy your apps broadly for Application development and App Development to hundreds of millions of users across a wide range of devices that is from phones to tablets and beyond. Android has undertaken several powerful, open source and cross platform frameworks. These frameworks enhance Android App Development and Mobile App Development. Among those who use cross platform frameworks, But there are several Frameworks currently available in the markets which support Android and iOS at minimum, and often target Blackberry, Windows Phone and Symbian. Some of the aforementioned frameworks are specialized in programming environments beyond Java Script. Android Developer Tools offer a full Java IDE with advanced features for developing, debugging and packaging Android apps. Using the IDE, you can develop on any Android device or can create virtual devices that emulate any hardware configuration. The most important parts of frameworks are Activity Manager, Resource Manager, Location Manager and Notification Manager. Being the fastest growing mobile OS, Android is relentlessly pushing the boundaries of hardware and software forward to bring new capabilities to users and developers. It has provided new opportunities through its frameworks and these frameworks also help in removing difficulties from developing the software. Going through brief details of each framework, you are supposed to select appropriate framework for developing rich native apps and games. Thus eventually we can say that there is no shortage of frameworks being provided. So users can work with them at ease can fulfill their application creation.

II. LIBRARY DESCRIPTION

According to the Eclipse Open Source Developer Report 2012, 60 percent of open source developers writing Android or iOS apps use only the official SDK. Among those who use cross-platform frameworks, the choices, ranked from first to last were:
- jQuery Mobile (28.6 percent)
- PhoneGap (17.9)
- Sencha Touch (7.9)
- Dojo Mobile (4.9)
- Titanium (2.8).

These multi-platform options are typically open source JavaScript frameworks with support for HTML5 and CSS. Aimed primarily at web developers, they are often used for migrating website content to app form. The frameworks support Android and iOS at a minimum, and often target BlackBerry, Windows Phone, and Symbian. Although they typically come with a "write once, run anywhere" promise, the amount of tweaking required for each version can still be considerable, and optimization of memory, battery life, and performance is often limited. Most of the frameworks offer drag-and-drop GUI design tools, and many incorporate APIs aimed at exploiting specific components like audio and GPS. Quite a few are built on the Model View Controller (MVC) UI and component interaction model.
Currently there are lots of Android Libraries available in the market for different purpose usage and here are some examples of them-

2D Engines	3D Engines	Action Bars
• AndEngine • cocos2d-android • cocos2d-x • PlayN • Rokon • SDL • YoghurtGum	• Dwarf • Irrlicht • jPCT AE • libGDX • Linderdaum • min3d • Ogre	• ActionBarSherlock • Extended ActionBar • FadingActionBar • GlassActionBar • v7 appcompat library
Architecture	Audio	Background Processing
• Android Bootstrap • DroidParts • GreenDroid • Ignition • Ketai • Mortar • Spring for Android	• aacdecoder-android • Audio Wife • Patchfield • PlayerHater	• Android Async • Android Priority Job Queue • Groundy • smoothie • Tape
Buttons	Color Pickers	Content Providers
• Android Circle Button • Android-Bootstrap • Circular Progress Button • Flat Button • Process Button • ProgressButton • PSGradientButtons • TH-ProgressButton	• android-color-picker • color-picker-view • ColorPickerPreference • HoloColorPicker	• Content Provider Helper • OrmLiteContentProvider • ProviGen • SimpleProvider • SQLiteProvider
Database Browsers	Date Pickers	Design
• SQLite Browser • SQLite DB Bowser • SQLite Manager	• android-betterpickers • android-datepicker • Android-RecurrencePicker • Caldroid • DateTimePicker • DateTimePicker Android 4.0+ • ExtendedCalendarView • MFCalendarView • Roboto Calendar View • TimesSquare for Android	• Android 4.0 Design Startkit • Android App Patterns • Android Cheatsheet for Graphic Designers • Android Niceties • Android Patterns • Google Android Design Guide • HoloAccent • ICS Apps
Graphics	Grid Views	HTML
• AChartEngine • AFreeChart • Android-Charts • AndroidCharts • Androidplot • desCharts • GraphView • HoloGraphLibrary • HzGrapher	• AndroidStaggeredGrid • AnimatedGridView • DynamicGrid • FreeFlow • PagingGridView • QuiltViewLibrary • StaggeredGridView • TwoWayGridView	• HtmlCleaner • Jericho • jsoup • owasp-java-html-sanitizer
IDE	IDE Plugins	Image Processing
• AIDE • Android Studio • Eclipse ADT • IntelliJ IDEA	• ADT Templates • Android for Maven Eclipse • Android Holo Colors IntelliJ Plugin • ButterKnifeZelezny • Dagger IntelliJ Plugin • Otto IntelliJ Plugin • SelectorChapek	• Android StackBlur • android-image-filtering • android-jhlabs • AndroidFastImageProcessing • JJIL • picasso-transformations

Layouts	List Views	Mobile Web Frameworks
• Android Constrained Widgets • Android Empty Layout • Android Slide Show Widget • CircleLayout • CircularView • DynamicBox • FlatUI • GridLayout • ImageLayout • ShowcaseView	• Android-MultiStateListView • Android-ScrollBarPanel • DragSortListView • EnhancedListView • Horizontal Variable ListView • ListViewAnimations • PagingListView • PlayView • SlideExpandableListView • SuperListview • SwipeListView • TreeViewList	• ChocolateChip-UI • Clank • Fries • Ionic • iUI • jQuery Mobile • nativeCSS • Ratchet
Maps	ORM	Security
• Android Maps Extensions • Clusterkraf • Google Maps Android API utility library • map-controller • MapNavigator • osmdroid • Polaris	• ActiveAndroid • ActiveRecord for Android • Androrm • Cupboard • DbQuery • greenDAO • Orman • OrmLite • Persistence • Sprinkles • Sugar ORM • Torch	• AndroidPinning • Conceal • NetCipher (Onionkit) • Secure-Preferences • Spongy Castle • SQLCipher • Windows Azure ADAL
Utils	View Pagers	XML
• Android Intents • android-common-lib • AndroidUtils • Apache Commons Codec • Apache Commons IO • AQuery • Guava • Joda Time • libs-for-android • NoTils • Okio	• AutoNotifyViewPager • JazzyViewPager • PagerSlidingTabStrip • ParallaxHeaderViewPager • ParallaxPager • VerticalViewPager • View Flow • ViewPagerIndicator	• JDOM • kXML • Simple • SimpleEasyXmlParser • Woodstox • XML Data Parser

On July 20, Adobe unveiled version 2.0 of the open source PhoneGap, a leader among the growing crowd of cross-platform, Android-compatible, mobile app frameworks. Open source developers welcomed new PhoneGap features such as a "Cordova WebView" function that enables developers to integrate code into larger native applications.

III. ANDROID-READY DEVELOPMENT FRAMEWORKS
The following are 15 of the more popular Android development tools. Unless otherwise noted, they are open source, cross-platform frameworks:

Basic4android: Anywhere Software's commercial RAD tool and IDE for Android provides a comprehensive feature set and an object-oriented programming language similar to Visual Basic.
http://www.basic4ppc.com/android/why.html

Corona SDK: Widely used among game developers, Corona is also a popular, general-purpose framework.

Corona Labs (formerly Ansca Mobile) claims an installed base of 120,000 developers. This high-end, commercial SDK offers over 500 APIs, as well as advertising and native UI support, and a built-in physics engine.
http://www.coronalabs.com/

DHTMLX Touch: This JavaScript and AJAX library focuses on UI widgets, and is aimed at building HTML5-based apps.
http://www.dhtmlx.com/touch/

Dojo Mobile: The Dojo community's BSD-licensed HTML5/JavaScript framework has added MVC and app-controller packages, as well as mobile-specific components such as switches and sliders. A degree of PhoneGap compatibility is also available.
http://dojotoolkit.org/features/mobile

iUI: This lightweight web UI framework includes a JavaScript library, CSS support, and development images.

http://www.iui-js.org/

jQuery Mobile: This popular, lightweight HTML5-based framework is built on jQuery, and focuses on semantic markup, progressive enhancement, and themable design. It's the leading cross-platform framework among Eclipse open source developers.
http://jquerymobile.com/

Kendo UI: Telerik's HTML5/JavaScript framework is available in open source and commercial versions. Kendo UI offers a wide selection of UI widgets and plugins, and provides an MVVM framework, performance optimization, and validation and internationalization features.
http://www.kendoui.com/

Mono for Android: Xamarin's C#- and enterprise-oriented package is compatible with a similar iOS-based MonoTouch version, and can also share code with the C#-based Windows Phone. Mono supplies an environment conducive to Visual Basic developers, and is touted for its debugger and native binary compiler.
http://xamarin.com/

MoSync SDK: MoSync supports C++, HTML5/JavaScript, or both on up to nine different platforms. The SDK is touted as being compatible with PhoneGap, as well MoSync's own new HTML5/JavaScript-based native mobile app developer/simulator, MoSync Reload.
http://www.mosync.com/

PhoneGap: Designed for JavaScript, HTML5, and CSS development, PhoneGap is now sponsored by Adobe and the Apache Foundation. The 2.0 version adds Windows Phone support, new CLI functions, and overhauled JavaScript libraries. It also debuts Cordova WebView, an embeddable HTML rendering control that uses Apache's Cordova-JS API for tasks such as integrating PhoneGap code into larger native apps.
http://phonegap.com/

RhoMobile Suite: Motorola's mature, business-oriented framework features RhoConnect, RhoStudio, RhoElements, and a new RhoHub used for cloud app-building. RhoMobile is built on the Ruby language, the Rails Frameworks, and the MVC model.
http://www.motorola.com/Business/US-EN/Business+Product+and+Services/Software+and+Applications/RhoMobile+Suite

Sencha Touch 2: Sencha's popular HTML5/JavaScript framework provides 50 built-in components, state management, and an integrated MVC system. It now offers a free native packager that streamlines distribution to stores like Google Play.
http://www.sencha.com/products/touch/

SproutCore: This HTML5-driven framework offers a "clean" MVC architecture, and emphasizes performance optimization and scalability.
http://sproutcore.com/

TheAppBuilder: JamPot's new HTML5-based native app-building app has received plenty of buzz. It features a codeless, drag-and-drop interface that lets users quickly build fairly rudimentary apps by filling in Q&A checklists. Highlights include extensive social networking integration and automated submissions to Google Play.
http://www.theappbuilder.com/

Titanium: Appcelerator claims its Android/iOS framework supports over 5,000 device and mobile-OS APIs. Unlike the more web-oriented frameworks, Titanium uses JavaScript to create native code, with claimed benefits in performance.
http://www.appcelerator.com/platform/titanium-sdk

Additional Android-compatible development options include Andromo, Application Craft, Hypernext Android Creator (HAC), Jo, jQTouch, MIT App Inventor, Togosoft Device Browser, Unity Mobile, WebApp.Net, Wink Toolkit, xUI, and Zepto.js. For more options, check out these roundups of Android development software from BuildMobile, Daily Tekk, MobiGeni, and Technology Trend Analysis. Meanwhile, post your own favorites in the comments section below.

Commercial C++ frameworks:
- unity3D: very good (available on Android, iOS, Web, Windows, OS X) [Game: Rocket Bunnies]
- Unreal Engine (commercial): the best engine but not for beginners [Game: Dungeon Defenders]

Open Source C++ frameworks:
- Ogre3D: the best open source 3d engine but it is a large framework
- Irrlicht: good performance, light framework [Game: Moblox]
- Linderdaum Engine: open source for Windows and Android
- Cocos2d-x: open source cross platform

Java Open Source Frameworks:
- AndEngine (Open Source): good performance. For documentation, look examples and read source code; but it is the Free library to begin a game project [Game: Drop Block]
- cocos2d for Android: Garbage Collector problem
- SDL is not a good idea because it is designed for framebuffer access.
- rokon: good performance and designed for mobile but project seems dead.

Physics Engine:
- box2d (OpenSource): fast and easy
- jbox2d (OpenSource): so slow on Java that I made a JNI wrapper with SWIG to use native box2d (AndEngine does the same)
- chipmunk (OpenSource): fast but I prefer box2d
- bullet (OpenSource): excellent 3D engine Spring for Android is an extension of the Spring Framework that aims to simplify the development of native Android applications.

Roboguice: RoboGuice is a framework that brings the simplicity and ease of Dependency Injection to Android, using Google's own Guice library;

III. CONCLUSIONS

From a developer's perspective, Android is a Linux-based operating system for Smartphone's and tablets. It includes a touch screen user interface, widgets, camera, network data monitoring and all the other features that enable a cell phone to be called a Smartphone. Android is a platform that supports various applications, available through the Android Play Store. The Android platform also allows end users to develop, install and use their own applications on top of the Android framework. The Android framework is licensed under the Apache License, with Android application developers holding the right to distribute their applications under their customized license. Currently other than the typical android library and frameworks all the available libraries and frameworks help an user accomplish his/her goal to create his own style and own design and prosper in the field of Android Application Development.

ACKNOWLEDGMENT

REFERENCES

[1]. Android developers site, tools android frameworks and libraries.
[2]. Android Arsenal : "A categorized directory of free libraries and tools for Android".
[3]. Android as I learn, "Android testing with new frameworks and libraries tutorial".
[4]. Developer zone, "Automated Android* Application Testing" by Roman Khatko (INTEL).