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TableTop

Android Displays and API

Introduction

In many electronics applications, visual displays are becoming of vital importance. As capabilities of electronics improve, there is more information that must be made available to users. There are many ways of implementing a visual display for use in electronics, from seven segment displays to liquid crystal displays. One current development in visual display is smart-phone and tablet PC use to display information. This paper is a review of visual displays and the Application Programming Interface (API) in Android tablet PCs.

Commercial Applications of Visual Displays on Android

There are hundreds of thousands of applications available on the Android Market, each of which features a visual display of some kind. Applications for these tablets are developed by thousands of independent developers who independently price their applications, and can cost in excess of 100 dollars in extreme cases. Common applications can range from one to approximately twenty dollars. Whether the application displays simple data or intricate animations for a game, applications are developed with myriad screen types in mind. Android tablets come with in many different sizes, ranging in size from 7 inches diagonally to 10.1 inches [1]. They display different resolutions also, ranging from 800 x 480 to 1200 x 800 [1].

Underlying Technology of Android Tablet Displays

Because these Android models come in different sizes and pixel resolutions, it is important to develop visual displays that function properly on any Android tablet, as any product utilizing a tablet would need to ensure that no information was cut off on any screen size or resolution. The display would need to be scaled based on the resolution and size of the screen for aesthetic purposes as well.

With many different options of tablet PCs for users, it is important that any developer keep in mind the different displays that are currently on the market and the ones that will be available in the foreseeable future to ensure that the display works properly. As some tablets have a gyroscope that can determine

what side of the tablet is closest to the ground and rotate the screen accordingly, a design decision must be made as to whether the display would rotate with the tablet. A rotating display would require 2 designed of the same display, as the display would be required to function on two different aspect ratios.

Android API runs on Java, and there are coding conventions that should be followed in order to make the code readable and understandable to any developer working on it in the future [3]. In addition to these standard code conventions for all Java programs, there are specific sets of norms that should be followed for coding on the Android platform to ensure that the code runs properly on the Android platform as well as with better efficiency and power consumption, as all Android devices are battery powered [4]. All new code must follow these guidelines if it is to be accepted on the Android market.

Building Blocks of an Android Visual Display

The Android API is well-documented, and it gives a large degree of freedom for application developers. Prebuilt Android functions have the ability to scale pixels in order to create a visual display compatible with various Android tablet PCs [5,6]. This is a simple method of laying out the display in a way that can scale easily with different tablets. Furthermore, this ability allows the developer to scale or move around objects depending on the aspect ratio of the display, which may change at any given time in tablets featuring a gyroscope. Developers can use relative sizes of objects to determine their relative positions, allowing the objects to “push” each other into place. Using the Android API, it is possible to create any imaginable 2-dimensional image as a visual display.