

# MUSIC PLAYER DESIGN USING GOOGLE MATERIALS

<sup>#1</sup>Chaitanya Deshpande, <sup>#2</sup>Uttkarsh Gonnade, <sup>#3</sup>Ajinkya Pakhide,  
<sup>#4</sup>Prof. S.P.Kosbatwar



<sup>1</sup>chaitudeshpande6@gmail.com,

<sup>2</sup>kai.uttkarsh@gmail.com,

<sup>3</sup>ajinkyapakhide1995@gmail.com,

<sup>4</sup>spkosbatwar@sinhgad.edu

<sup>#123</sup>Student, Dept. of Computer Engineering,

<sup>#4</sup>Prof. Dept. of Computer Engineering

Smt. Kashibai Navale College of Engineering  
Pune, India

## ABSTRACT

In order to give a solution to the problem of complicated functions and large memory requirement mobile phone music player on the current market, a new music player of convenient, simple, less required memory as well as easy to use is developed. Based on the Android technology, using the Android studio for designing and coding of music player. The new design chiefly realizes six essential functions including playlists, menus, main play interface, play settings, media file browsing and song search. This player has qualities of being user-friendly, simple operation, and running independently on the Android mobile devices.

**Keywords – Material Design, Ambient Light**

## ARTICLE INFO

### Article History

Received: 17<sup>th</sup> March 2017

Received in revised form :  
17<sup>th</sup> March 2017

Accepted: 19<sup>th</sup> March 2017

**Published online :**

**24<sup>th</sup> March 2017**

## I. INTRODUCTION

With the rapid development of computer and communications technology, the mobile phone is more and more powerful. That is not just a mobile communication tool in our daily life, a variety of media applications begin to appear on cellphone, such as video calls, multimedia player, etc. In order to realize these applications, the support of a more powerful development platform is needed, so the research of smartphone operating system and its development has become one of the most active areas [1].

In November 2007 OHA (open Handset Alliance), which lead by Google, released a smartphone platform - Android. Android is an open and free platform for mobile terminals which includes operating system, middleware, user interface and application software [2]. Android has a good development and debugging environment, provides a variety of APIs and supports a variety of common audios/videos decoding. The openness of Android platform can not only promote the technical innovation (including the platform itself), but also help to reduce development costs, and allow manufacturers to customize the characteristic product easily. Therefore, it has a large market potential [3].

We designed and implemented a music player based on Android in this paper. According to the mobile phone features, the music player uses the whole screen to display more information. In addition to the basic functions of playback, the music player can also like a song and create a separate playlist of those liked songs. The design of the player is also significant to some extent for developing other applications on Android.

## II. SYSTEM ARCHITECTURE

Android is a software stack that is divided into four layers which are applications, application framework, libraries and Android runtime, Linux kernel [4] from top to down. The applications are written using Java programming language [4] and web applications are written with help of HTML 5 and JavaScript. The APIs are provided by application framework, and using these APIs developers develop their applications. The libraries and Android runtime provide the support for the running and functioning of applications, the libraries are invoked by application framework via JNI [5]. Linux kernel, which is based on

version 2.6, acts as a hardware manager and the base of upper layers.

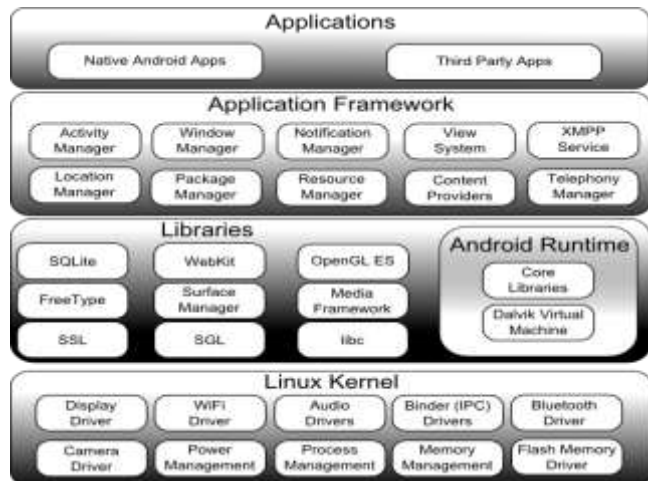


Figure I. the android architecture

### III. APPLICATION COMPONENTS

Application components are the essential building blocks of an Android application, there are four different types of application components [4].

#### 1) Activity

An activity is an interface between application and user. An Activity represents a single screen, and each one is independent of others and communicates with others through intent [6].

#### 2) Service

Services run in the background to perform operations which are long in duration. A service does not provide an user interface. Generally the application which runs in background will need service, such as music playback. In this design, the part of playback is achieved by using service.

#### 3) Content Provider

A content provider is used to share data. Android application data is private, and sometimes we need to share data between different programs, content provider is to provide this function. Through the content provider, other applications can query or even modify the data (if the content provider allows it) [4].

#### 4) Broadcast Receiver

A broadcast receiver is used to receive system-wide broadcast announcements. It gets a happening of event through receiving the broadcast announcements. In this design, the time's update of player is achieved by broadcast receiver.

### IV. SOFTWARE ARCHITECTURE AND MODULES

The music player is built using a front-back end architecture. The front-end consists of player interface and music list and was realized by activity for interacting with user. The back-end is the execution of playback which is based on service. The communications between front-end and back-end are realized with the help of intent.

The music player consists of some modules which are tab, player interface, playback, music list, list, file, mp3 information, constant value and settings.

#### 1) All songs module

The All songs is the first module the player runs when the player is opened, which displays all the music found in the phone. The player is associated with player interface and the music list associated with music list, which not only make full use of screen of mobile phone, but also switch between player interface and music list with a single touch.

#### 2) Player interface module

The player interface module provides the player interface for user, and the control operations and display information of player are via it. The player interface consists of current music name, status, current/total time, progress bar, previous, play, pause, stop, next, play mode, like current song.

#### 3) My library

My library module is used to build music list by invoking list module. The music list is sorted in various fashions like albums, artists, genres and most played. The listed names are clickable, and the music will play when you click the music name.

#### 4) Playback module

The playback module is used to achieve playback and related operations, such as play, pause, stop, like the song, shuffle, repeat and update the progress bar. In this module, we achieved translating commands which come from the player interface module and music list module into operations and the information which is encapsulated in intent is sent.

### V. MATERIAL DESIGN

Material design is a three-dimensional environment comprising of elements light material, and cast shadows.

All material objects possess x, y and z dimensions.

All material objects possess a single z-axis position.

In material design key lights form the directional shadows, and ambient light forms soft shadows Key lights create directional shadows, and ambient light creates soft shadows.[7]

Material thickness - 1 dp.

#### 1) Shadows

Shadows in material design are formed by elevation difference amongst two overlapping material.



Figure II

## 2) Light and shadow

In the material environment, virtual lights illuminate the scene. Key lights form directional shadows, while ambient light forms soft shadows from all the angles.



Figure III

Shadow cast by key light



Figure IV

Shadow cast by ambient light

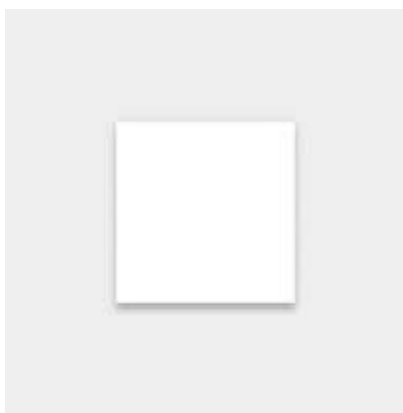


Figure V

Combined shadow from key and ambient lights

## 3) Material

Material in general has certain changeless characteristics and inherent behaviours.

Perceiving these qualities of material will help palm material in a way that is agreeable with the vision of material design.

### Material characteristics

#### Solid

Inhabit unique points in space

Impenetrable

Mutable shape

Changes in size only along its plane

Stiff

Can join to other material

Can separate, split, and heal

Can be created or destroyed

Moves along any axis[8]



Figure VI

### Shadows

Shadows furnish important visual discriminative stimulus about objects' depth and directional movement. They are the only visual cue indicating the amount of separation between any given surfaces. An object's elevation determines the occurrence of its shadow.

Softer, larger shadows bespeak the floating action button is at a higher elevation than the blue sheet, which has a crisper or more clear distinguished shadow.[9]

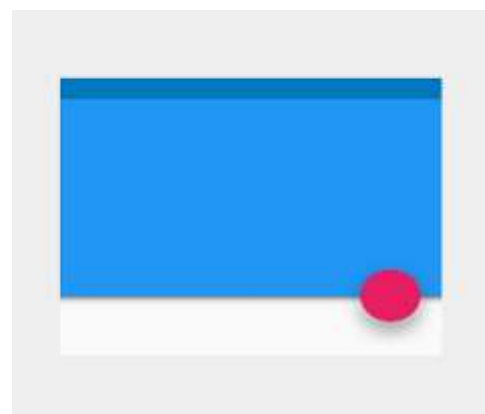


Figure VII

In motion, shadows render useful cues about an object's direction of movement and whether the distance between surfaces is increasing or decreasing.

The shadow is softer and larger as the object's distance increases and is crisper and smaller as the distance decreases.

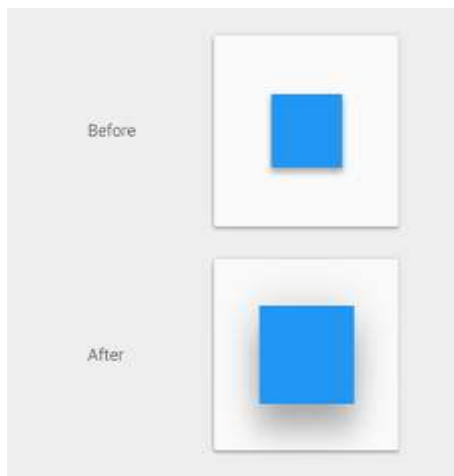


Figure VIII

In this case, the pursuant shadow helps the user realize that the object is changing shape as opposed to changing elevation.

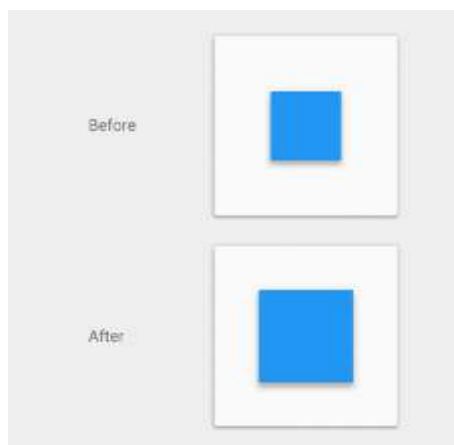


Figure IX

## VI. TEST

We tested the music player after implementing it. The music player can achieve the functions we designed, such as showing the current music name with marquee style, playing status, the current/total time, progress bar, seeking the current track forwards or backwards, etc. The player stores the current music automatically when the player is closed, and plays the music automatically when the player runs next time. The result is shown in Figure X.



Figure X

## VII. CONCLUSION

After reviewing many papers and making a survey of existing techniques, we have reached the conclusion that our project will benefit the people owning the phones which have minimal hardware specifications or memory specifications and user's will also benefit the Material design UI of the application.

## REFERENCES

- [1] PAN YONG-CAI, LIU WEN-CHAO, LI XIAO.DEVELOPMENT AND RESEARCH OF MUSIC PLAYER APPLICATION BASED ON ANDROID[A].IN:2010 INTERNATIONAL CONFERENCE ON COMMUNICATIONS AND INTELLIGENCE INFORMATION SECURITY[C].USA: IEEE COMPUTER SOCIETY'S CONFERENCE PUBLISHING SERVICES,2010:23-25
- [2] ZHANG ZHENG-ZHENG,LIN YAO-RONG.DEVELOPMENT OF ANDROIDBASED MEDIAPLAYER[J].MODERN ELECTRONICS TECHNIQUE,2011,34(2):5-6
- [3] LI YANG,FENG GANG,LI LIANG,LUO YONG-HUA.DEVELOPMENT AND RESEARCH ON MULTIMEDIA APPLICATION BASED ON ANDROID [J].COMPUTER AND MODERNIZATION,2011(4):149-150
- [4]GOOGLE.ANDROIDDEVELOPERS[DB/OL].HTTP://DEVELOPER.ANDROID.COM/GUIDE/BASICS/WHAT-IS-ANDROID.HTML
- [5]WIKIPEDIA.JNI[DB/OL].HTTP://EN.WIKIPEDIA.ORG/WIKI/JAVA\_NATIVE\_INTERFACE.

[6]GOOGLE.ANDROID DEVELOPERS [DB/OL]. HTTP: // DEVELOPER.ANDROID.COMREFERENCE/ANDROID/CONTENT/INTENT.HTML

[7]HTTPS://MATERIAL.IO/GUIDELINES/MATERIALDESIGN/ENVIRONMENT.HTML

[8]HTTPS://MATERIAL.IO/GUIDELINES/MATERIALDESIGN/MATERIAL PROPERTIES.HTML#

[9]HTTPS://MATERIAL.IO/GUIDELINES/MATERIAL-DESIGN/ELEVATION-SHADOWS.HTML#ELEVATION-SHADOWS-ELEVATION-ANDROID