Android程序设计

音视频录制和播放

2019.7.18

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内容

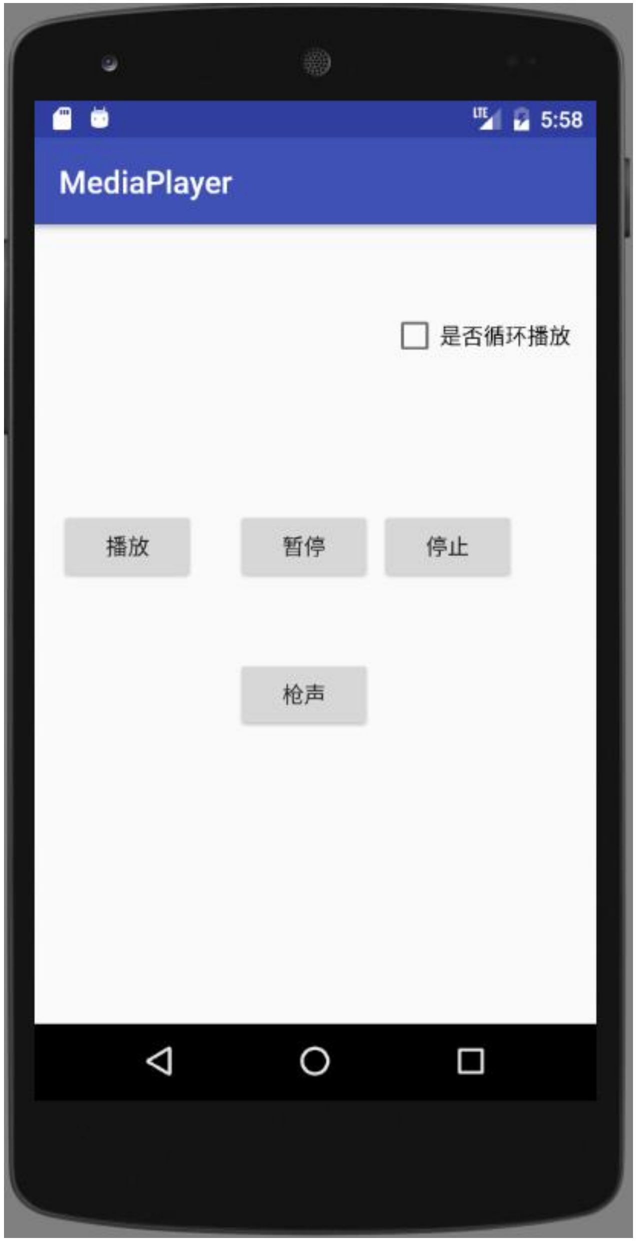
- 资源音乐播放
- SD卡
- SD卡音乐播放
- 视频播放

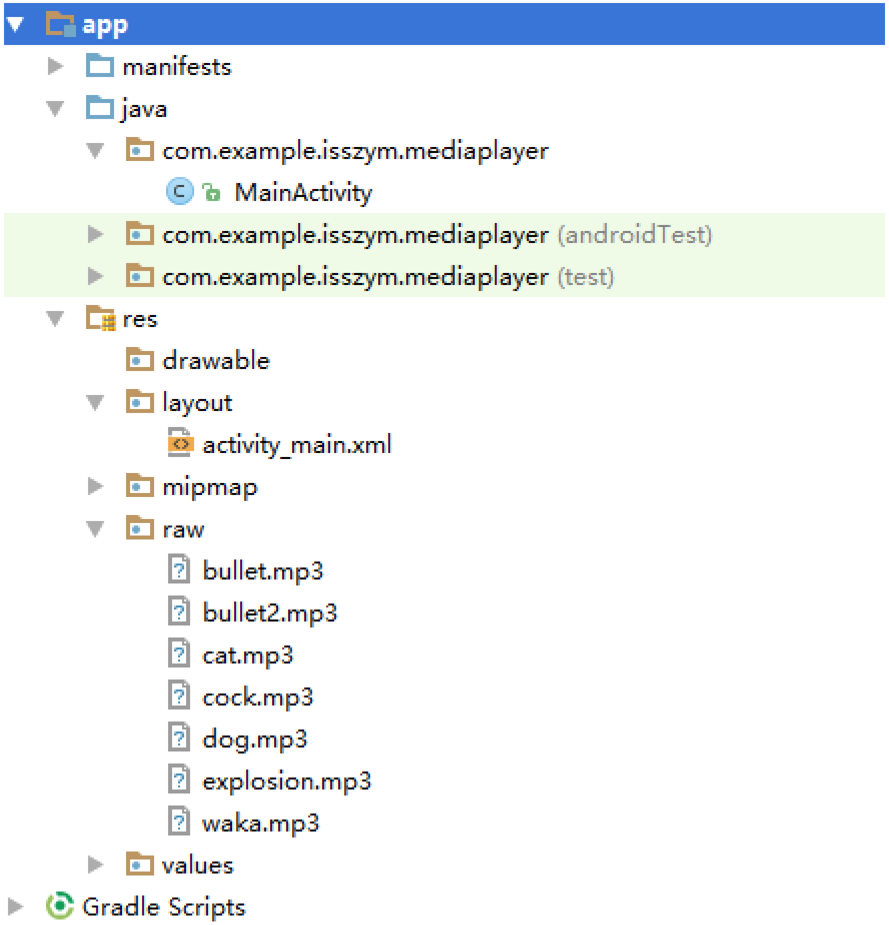
资源音乐播放

工程：MediaPlayer

```
import static android.media.MediaPlayer.create;

public class MainActivity extends AppCompatActivity {
    final  private int PLAYING =1;
    final  private int PAUSE =2;
    final  private int  STOP = 3;
    MediaPlayer mp=null;
    int state = 0;          // 1-playing, 2-pause, 3-stop

    float volumnRatio;
    SoundPool sp;
    Map<Integer,Integer> map;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        setBulletVoice();
        Button btnPlay = (Button)findViewById(R.id.buttonPlay);
        btnPlay.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                boolean loop =((CheckBox)findViewById(R.id.checkBox)).isChecked();
                if(mp!=null && (mp.isPlaying() || state==PAUSE)){
                   mp.setLooping(loop);
                   state=PLAYING;
                   if(!mp.isPlaying())mp.start();
                   return;
                }
        try {
            if(mp!=null) {
                mp.stop();
                mp.reset();
            }
            mp = create(MainActivity.this, R.raw.waka);
            mp.setAudioStreamType(AudioManager.STREAM_MUSIC);
            mp.setLooping(loop);
            mp.start();
            mp.setVolume(14.0f, 14.0f); //声音调不了
            state=PLAYING;
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
});
Button btnPause = (Button)findViewById(R.id.buttonPause);
btnPause.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        mp.setLooping(false);
        mp.pause();
        state=PAUSE;
    }
});
Button btnStop = (Button)findViewById(R.id.buttonStop);
btnStop.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        mp.setLooping(false);
        mp.stop();
        state=STOP;
    }
});
```

```
        Button btnBullet = (Button)findViewById(R.id.buttonBullet);
        btnBullet.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                sp.play(map.get(0),  //声音资源
                               volumnRatio, //左声道
                               volumnRatio, //右声道
                               1,        //优先级
                               0,        //循环次数，0是不循环，-1是一直循环
                               1);       //回放速度，0.5~2.0之间，1为正常速度

            }
        });
    }

    void setBulletVoice(){
        AudioManager am = (AudioManager)getSystemService(AUDIO_SERVICE);
        float audioMaxVolumn = am.getStreamMaxVolume(AudioManager.STREAM_MUSIC); //最大音量
        float audioCurrentVolumn = am.getStreamVolume(AudioManager.STREAM_MUSIC); //当前音量
        //实例化AudioManager对象，控制声音
        map = new HashMap<Integer,Integer>();
        volumnRatio = audioCurrentVolumn/audioMaxVolumn;
        //音效播放池
        if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.LOLLIPOP) {
            sp= new SoundPool.Builder()
                    .setMaxStreams(10)
                    .build();
        } else {
            sp = new SoundPool(10, AudioManager.STREAM_MUSIC, 0);
        }
        map.put(0,sp.load(MainActivity.this,R.raw.bullet,1));
        map.put(1, sp.load(MainActivity.this,R.raw.bullet2,1));
    }
}
```





```
▼ app
    ▶ manifests
    ▼ java
        ▼ com.example.isszym.mediaplayer
              MainActivity
        ▶ com.example.isszym.mediaplayer (androidTest)
        ▶ com.example.isszym.mediaplayer (test)
    ▼ res
          drawable
        ▼ layout
              activity_main.xml
        ▶ mipmap
        ▼ raw
              bullet.mp3
              bullet2.mp3
              cat.mp3
              cock.mp3
              dog.mp3
              explosion.mp3
              waka.mp3
        ▶ values
▶ Gradle Scripts
```

SD卡

方法1、直接访问：

```
private String path = "/sdcard/DCIM/Camera/a.mp3"
```

方法2、先取得路径再访问：

```
public String getSDPath() {
    File sdDir = null;
    boolean sdCardExist
         = Environment.getExternalStorageState()
          .equals(android.os.Environment.MEDIA_MOUNTED);//判断sd卡是否存在
    if (sdCardExist) {
        sdDir = Environment.getExternalStorageDirectory();//获取跟目录
        return sdDir.toString();
    }
    return null;
}

private String path = getSDPath() +"/DCIM/Camera/a.mp3"
```

参考　　参考

SD卡音乐播放

项目名：**NewMusicPlayer**

```
public class MainActivity extends AppCompatActivity {
    private MediaPlayer mediaPlayer = new MediaPlayer();       //媒体播放器对象
    private String path;                                  //音乐文件路径
    private boolean isPause;                              //暂停状态
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        path="/mnt/sdcard/Music/a1.mp3";          // 或  path= getSDPath() +"/Music/a1.mp3";
    }
    public void Play(View vw) {
        int position = 0;   File file = new File(path);
        if (!file.exists()) {
            Toast.makeText(this, "音频文件路径错误:"+path, Toast.LENGTH_LONG).show();
            return;
        }
        try {
            mediaPlayer.reset();                         //把各项参数恢复到初始状态
            mediaPlayer.setDataSource(path);             // 设置播放的视频源
            mediaPlayer.prepare();                      //进行缓冲
            mediaPlayer.setOnPreparedListener(new PreparedListener(position));
       } catch (Exception e) {
            Toast.makeText(this, "播放音频径错误"+e.getMessage(), Toast.LENGTH_LONG).show();
        }
    }
```

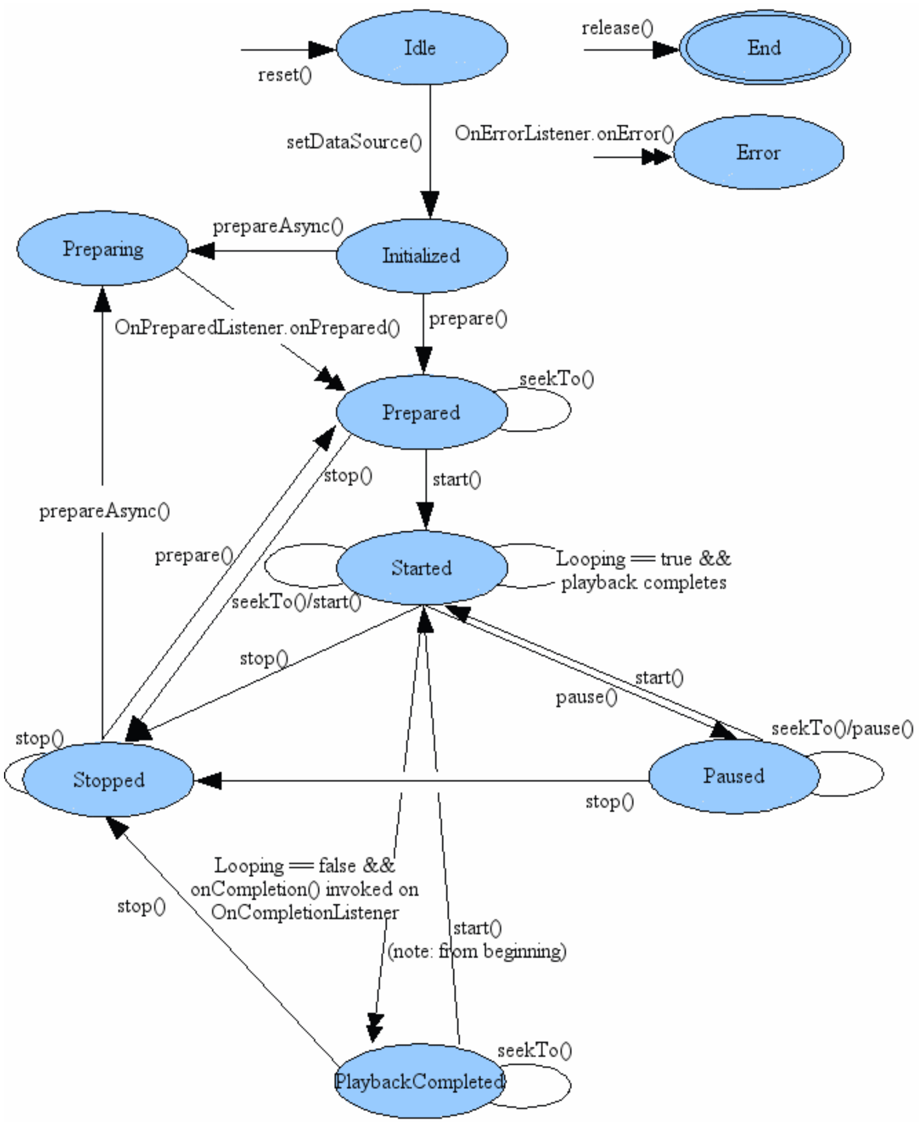
```
public void Pause(View vw) {
    if (mediaPlayer != null && mediaPlayer.isPlaying()) {
        mediaPlayer.pause();
        isPause = true;
    }
}
public void Stop(View vw) {
    if (mediaPlayer != null) {
        mediaPlayer.stop();
        mediaPlayer.release();
    }
}
@Override
public void onDestroy() {
    if (mediaPlayer != null) {
        mediaPlayer.stop();
        mediaPlayer.release();
    }
}
 private final class PreparedListener implements MediaPlayer.OnPreparedListener {
    private int positon;
    public PreparedListener(int positon) {
        this.positon = positon;
    }
    @Override
    public void onPrepared(MediaPlayer mp) {    //当音乐准备好的时候开始播放
        mediaPlayer.start();         //开始播放
        if (positon > 0) {           //如果音乐不是从头播放
            mediaPlayer.seekTo(positon);
        }
    }
}
```

```
 public String getSDPath(){
        File sdDir = null;
        boolean sdCardExist =
Environment.getExternalStorageState().equals(android.os.Environment.MEDIA_MOUNTED);
        if(sdCardExist){
            sdDir = Environment.getExternalStorageDirectory();//获取跟目录
        }
        return sdDir.toString();
    }
}
```

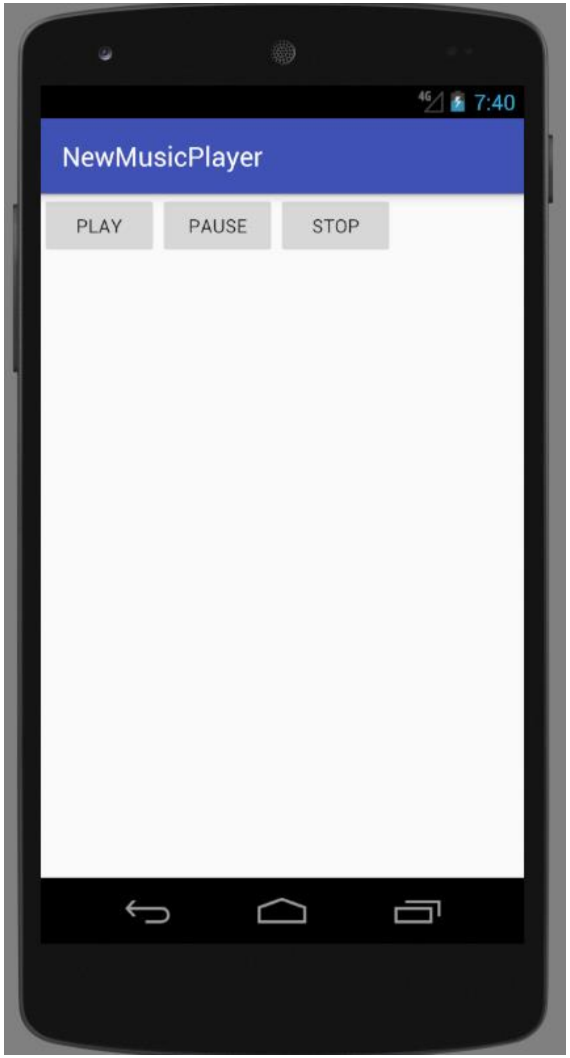
参考 参考

```
mp.reset();
mp = create(MainActivity.this, R.raw.a1);
mp.setAudioStreamType(AudioManager.STREAM_MUSIC);
mp.setVolume(12f,12f); //声音调不了
mp.start();
```

参考


Idle
reset()
release()
End
setDataSource()
OnErrorListener.onError()
Error
Preparing
prepareAsync()
Initialized
OnPreparedListener.onPrepared()
prepare()
seekTo()
Prepared
stop()
start()
prepareAsync()
prepare()
Started
Looping == true &&
playback completes
seekTo()/start()
stop()
start()
pause()
seekTo()/pause()
stop()
Stopped
Paused
stop()
Looping == false &&
onCompletion() invoked on
OnCompletionListener
stop()
start()
(note: from beginning)
seekTo()
PlaybackCompleted

```
<?xml version=“1.0” encoding=“utf-8”?>
<LinearLayout xmlns:android=“http://schemas.android.com/apk/res/android”
    android:layout_width=“match_parent”
    android:layout_height=“match_parent”
    android:orientation=“horizontal”>

    <Button
        android:text=“Play”
        android:layout_width=“wrap_content”
        android:layout_height=“wrap_content”
        android:onClick=“Play” />

    <Button
        android:text=“pause”
        android:layout_width=“wrap_content”
        android:layout_height=“wrap_content”
        android:onClick=“Pause” />

    <Button
        android:text=“stop”
        android:layout_width=“wrap_content”
        android:layout_height=“wrap_content”
        android:layout_alignTop=“@+id/btnPause”
        android:onClick=“Stop” />
</LinearLayout>
```



视频播放

项目名：**VideoPlayer**

```
public class MainActivity extends AppCompatActivity {
    private final String TAG = "main";
    private EditText et_path;
    private SurfaceView sv;
    private MediaPlayer mediaPlayer;
    private SeekBar seekBar;
    private int currentPosition = 0;
    private boolean isPlaying;
    private Button btn_play, btn_pause, btn_replay, btn_stop;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        seekBar = (SeekBar) findViewById(R.id.seekBar);
        sv = (SurfaceView) findViewById(R.id.sv);
        et_path = (EditText) findViewById(R.id.et_path);
        btn_play = (Button) findViewById(R.id.btn_play);
        btn_pause = (Button) findViewById(R.id.btn_pause);
        btn_replay = (Button) findViewById(R.id.btn_replay);
        btn_stop = (Button) findViewById(R.id.btn_stop);
        btn_play.setOnClickListener(click);
        btn_pause.setOnClickListener(click);
        btn_replay.setOnClickListener(click);
        btn_stop.setOnClickListener(click);
    }
```

```
private View.OnClickListener click = new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        switch (v.getId()) {
            case R.id.btn_play:
                play(0);
                break;
            case R.id.btn_pause:
                pause();
                break;
            case R.id.btn_replay:
                replay();
                break;
            case R.id.btn_stop:
                stop();
                break;
            default:
                break;
        }
    }
};
protected void stop() {
    if (mediaPlayer != null && mediaPlayer.isPlaying()) {
        mediaPlayer.stop();
        mediaPlayer.release();
        mediaPlayer = null;
        btn_play.setEnabled(true);
        isPlaying = false;
    }
}
```

```
protected void play(final int msec) {
    String path = et_path.getText().toString().trim();
    File file = new File(path);
    if (!file.exists()) {
        Toast.makeText(this, "视频文件路径错误", Toast.LENGTH_LONG).show();
        return;
    }
    try {
        mediaPlayer = new MediaPlayer();
        mediaPlayer.setAudioStreamType(AudioManager.STREAM_MUSIC);
        mediaPlayer.setDataSource(file.getAbsolutePath());
        mediaPlayer.setDisplay(sv.getHolder()); // 设置显示视频的SurfaceHolder
        Log.i(TAG, "开始装载");
        mediaPlayer.prepareAsync();
        mediaPlayer.setOnPreparedListener(new OnPreparedListener() {

            @Override
            public void onPrepared(MediaPlayer mp) {
                Log.i(TAG, "装载完成");

                // 首先取得video的宽和高
                int vWidth = mediaPlayer.getVideoWidth();
                int vHeight = mediaPlayer.getVideoHeight();

                // 该LinearLayout的父容器 android:orientation="vertical" 必须
                LinearLayout linearLayout = (LinearLayout) findViewById(R.id.ll);
                int lw = linearLayout.getWidth();
                int lh = linearLayout.getHeight();
```

```
// 如果video的宽或者高超出了当前屏幕的大小，则要进行缩放
float wRatio = (float) vWidth / (float) lw;
float hRatio = (float) vHeight / (float) lh;

// 选择大的一个进行缩放
float ratio = Math.max(wRatio, hRatio);
vWidth = (int) Math.ceil((float) vWidth / ratio);
vHeight = (int) Math.ceil((float) vHeight / ratio);

// 设置surfaceView的布局参数
ViewGroup.LayoutParams lp= sv.getLayoutParams();
lp.width= vWidth;
lp.height= vHeight;
sv.setLayoutParams(lp);


mediaPlayer.start();
mediaPlayer.seekTo(msec); // 按照初始位置播放
 // 设置进度条的最大进度为视频流的最大播放时长
seekBar.setMax(mediaPlayer.getDuration());
```

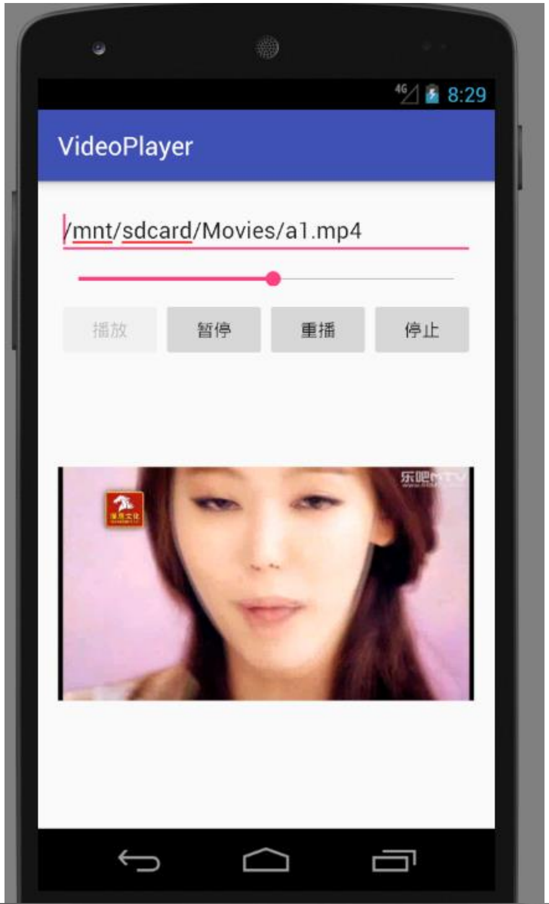
```
        // 开始线程，更新进度条的刻度
        new Thread() {
            @Override
            public void run() {
                try {
                    isPlaying = true;
                    while (isPlaying) {
                        int current = mediaPlayer
                                .getCurrentPosition();
                        seekBar.setProgress(current);

                        sleep(500);
                    }
                } catch (Exception e) {
                    e.printStackTrace();
                }
            }
        }.start();
        btn_play.setEnabled(false);
    }
});
mediaPlayer.setOnCompletionListener(new OnCompletionListener() {
    @Override
    public void onCompletion(MediaPlayer mp) {
        // 在播放完毕被回调
        btn_play.setEnabled(true);
    }
});
```

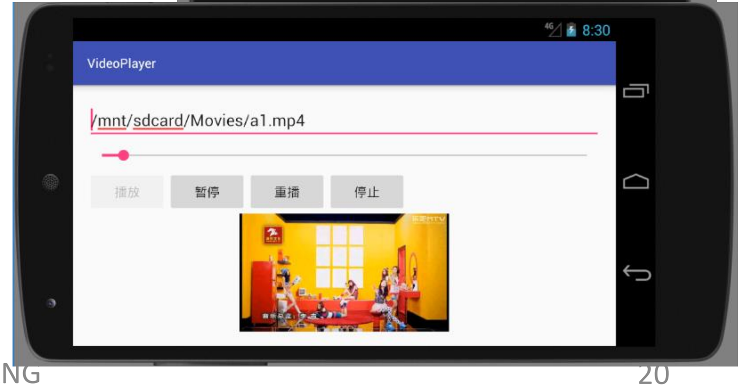
```
 mediaPlayer.setOnErrorListener(new OnErrorListener() {
     @Override
     public boolean onError(MediaPlayer mp, int what, int extra) {
       // 发生错误重新播放
       play(0);
       isPlaying = false;
       return false;
     }
   });
 } catch (Exception e) {
   e.printStackTrace();
 }

}
 protected void replay() {
   if (mediaPlayer != null && mediaPlayer.isPlaying()) {
     mediaPlayer.seekTo(0);
     Toast.makeText(this, "重新播放", Toast.LENGTH_LONG).show();
     btn_pause.setText("暂停");
     return;
   }
   isPlaying = false;
   play(0);


 }
```

```
    /**
     *  暂停或继续
     */
    protected void pause() {
        if (btn_pause.getText().toString().trim().equals("继续")) {
            btn_pause.setText("暂停");
            mediaPlayer.start();
            Toast.makeText(this, "继续播放", Toast.LENGTH_LONG).show();
            return;
        }
        if (mediaPlayer != null && mediaPlayer.isPlaying()) {
            mediaPlayer.pause();
            btn_pause.setText("继续");
            Toast.makeText(this, "暂停播放", Toast.LENGTH_LONG).show();
        }

    }
}
```

参考　参考

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity" >

    <EditText
        android:id="@+id/et_path"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="/mnt/sdcard/Movies/a1.mp4" />

    <SeekBar
        android:id="@+id/seekBar"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="horizontal" >
```





```xml
   <Button
        android:id="@+id/btn_play"
        android:layout_width="0dip"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="播放" />

    <Button
        android:id="@+id/btn_pause"
        android:layout_width="0dip"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="暂停" />

    <Button
        android:id="@+id/btn_replay"
        android:layout_width="0dip"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="重播" />

    <Button
        android:id="@+id/btn_stop"
        android:layout_width="0dip"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="停止" />
</LinearLayout>
```

```
   <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="horizontal"
        android:gravity="center"
        android:id="@+id/ll">
       <SurfaceView
          android:id="@+id/sv"
          android:layout_width="wrap_content"
          android:layout_height="wrap_content" />
    </LinearLayout>
</LinearLayout>
```