OpenaMedia-C

OpenaMedia-C(client) is an MediaPlayer-like Android app for playing audio/video from Local/Network. It is a subset of OpenaMedia, a opensourced project series focusd on media technology.

Supported Media formats:

- FLV/MP4/MP3
- Other formats shall be supported by adding extensions to the recognized list when scanning under sdcard.

Supported Protocals:
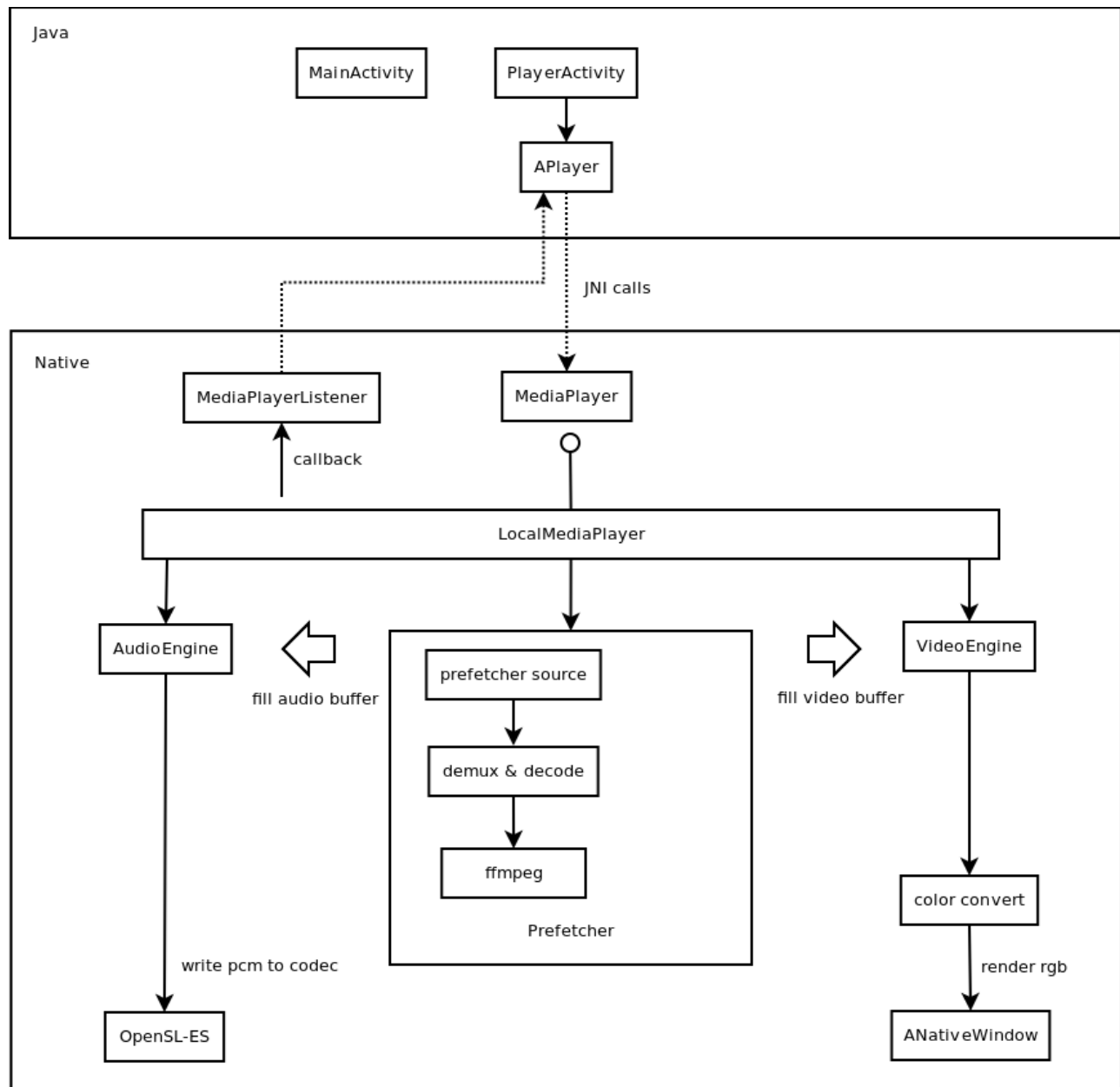
- FILE/HTTP/HLS.
- RTSP will be supported later.

Known Issues:

- No full screen mode for now. Will be supported later.
- Only the files under sdcard could be scanned at the beginning of app start up, and shown in the dropdown list. It does not rely on Android System Media Scanning, because some developers(me~) always push files to sdcard using adb, which could not be detected by system.
- PorgressBar not working so well. Mostly, it is caused by the asynchronized thread mode of playing.

Architecture:

- UI mainly uses liner layout with several components as surfaceview/seekbar, and APlayer.java wrappers player interface, both of which are SDK implemented.
- The demuxing/decoding/rendering logic and thread mode are mainly android native and NDK implemented.

Architecture Diagram:

Java

```
MainActivity        PlayerActivity
                         |
                         v
                     APlayer
```

JNI calls

Native

```
MediaPlayerListener          MediaPlayer
        ^                          o
        | callback                 |
        |                          v
      LocalMediaPlayer
```

```
AudioEngine    <=    Prefetcher:    =>    VideoEngine
                  prefetcher source
 fill audio buffer      |          fill video buffer
                        v
                  demux & decode
                        |
                        v
                     ffmpeg
                                          color convert
 write pcm to codec                       render rgb
                        |                       |
        v                                       v
    OpenSL-ES                             ANativeWindow
```

<u>Thread Mode:</u>
- Every invoking to bottom LocalMediaPlayer except 'stop', is asynchronized, and shall generate a message to be handled in the thread of message queue.
- Prefetcher maintains a internal looping thread demuxing and decoding audio/video packets from input file/network, and queuing the decoded pcm/yuv data.
- Video Engine maintains a internal looping thread fetching yuv data from Prefetcher video queue, colorconverting the yuv to rgb and renderring to nativewindow.
- Audio Engine registers the OpenSL output mix with a callback, which will be called filling pcm data from Prefetcher audio queue.

<u>Environment Setup:</u>
- android-sdk + android-ndk-r9c + eclipse.
- ffmpeg2.2.5 static libraries(.a) compiled under ndk.

<u>User Manual:</u>
- Open the app, and the text dropdown list will indicate the found media files under sdcard.
- You can input another file path, or network stream like: "http://..."
- After choose or input the media path, click the start icon entering the player and click the play icon at the bottom.