ANDROID OPERATING SYSTEM AND IMPLEMENTATION OF FACE DETECTION APPLICATION ON ANDROID

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Abstract:

Android is an operating system for mobiles, developed by Google and based on Linux kernel 2.6. The Android application is written by Java language. The thesis shows an overview of Android, Android architechture, Android SDK, Android NDK, components of Android application and two methods of face detecting that is using OpenCV and framework API of Android. The thesis also points out the difference between Java virtual machine (JVM) and Dalvik virtual machine (DVM). Dalvik is the virtual machine for implementing of Android applications.

In this thesis, I represent a process of building and implementing an application using Android NDK. This process will be used for building and implementing the face detectio using OpenCV. OpenCV is a library supporting for image processing and developed by Intel. This library includes about 500 functions written by C and C++ language. The firstly, in order to use OpenCV on Android, the thesis shows a process of porting OpenCV into Android. The thesis also shows the algorithm that OpenCV used for face detecting is presented by Viola and Jones. In order that the program written by Java language can access the functions written by C/C++ language, the thesis also gives a method called JNI (Java Native Interface) with a simple example that is demo with "Hello World" application on Android emulator.

The second method of face detecting is to use framework API of Android. API is Application Programming Interface. Android provides a framework API which is located in the applications framework layer of Android's architechture. It consists of packages and classes that developer can use for building and developing their applications. The thesis presents this method to implement the face detection applicaton on Android. And the thesis also shows results when the program is implemented.

Keyword: *Android, Face detection of Viola-Jones, JNI, Android NDK*