

# **Test Plan for OpenCV Android Service solution v 0.9**

## **Testing Subject**

This plan is the primary document describing details of testing of OpenCV Android Service (hereinafter 'the Service').

The Service is a solution based on Android service intended to manage (download / install / update / uninstall) and to share between applications on the target device the OpenCV binaries (.so).

## **Scope**

The Service functionality can be splitted to 3 logical blocks:

1. OpenCV lib Java loader - a part of OpenCV for Android SDK that is called from user app code to load native OpenCV libs before the 1st call OpenCV functionality.
2. OpenCV Engine - an Android service (published on Google Play) that provides to the OpenCV lib Java loader (see above) all the necessary info to load the appropriate OpenCV binaries (.so) and if they are not yet installed invokes Google Play to download the appropriate OpenCV binary package (see below).
3. A set of hardware-specific OpenCV binary packages (published on Google Play) containing OpenCV native libs targeted to particular hardware.

The scope of testing is to verify that all these blocks work together OK (integration testing).

## **Testing methodology**

Testing is performed via run of a testing app that contains OpenCV initialization code like we recommend users to use and check of the app behavior (successful start or failing with an expected message).

A set of testing app APKs are built for verification purposes:

- test\_engine\_static\_armv5 (calls initStatic(), keeps armeabi libs)
- test\_engine\_static\_armv7a (calls initStatic(), keeps armeabi-v7a libs)
- test\_engine\_static\_x86 (calls initStatic(), keeps x86 libs)
- test\_engine\_async\_v240 (calls initAsync(2.4.0))
- test\_engine\_async\_v241 (calls initAsync(2.4.1))
- test\_engine\_async\_v249 (calls initAsync(2.4.9))
- test\_engine\_async\_v300 (calls initAsync(3.0.0))

## Possible condition options

### HW:

1. general arm-v7a+ (LG or HTC)
2. arm-v5 or arm-v6
3. x86
4. [?] unknown

### OS:

1. Android 4.x
2. Android 3.x
3. Android 2.x

### Engine status:

1. not installed
2. installed out-dated
3. installed up-to-date

### binary APK:

1. not installed
2. installed older version
3. installed incompatible upper version
4. installed HW-incompatible
5. installed compatible version, compatible but not the best matching to HW
6. installed compatible version, the best matching to HW

### requested OpenCV version:

1. valid and known
2. valid and unknown
3. invalid

### GMarket:

1. present
2. absent

### internet:

1. on
2. off

## Test Cases

### Static

#### TC-static-compat

Summary: install app that calls `initStatic()` when there are compatible libs in the APK

Preconditions:

1. any arm-v7a+ device (tegra 2/3, HTC, LG) with Android 2.2+
2. [re]install test\_engine\_static\_armv5

Do -> verify:

1. start the app -> "OpenCV is loaded OK"

### **TC-static-match**

Summary: install app that calls initStatic() when there are matching libs in the APK

Preconditions:

1. any arm-v7a+ device (tegra 2/3, HTC, LG) with Android 2.2+
2. [re]install test\_engine\_static\_armv7a

Do -> verify:

1. start the app -> "OpenCV is loaded OK"

### **TC-static-incompat**

Summary: install app that calls initStatic() when there are no compatible libs in the APK

Preconditions:

1. any arm-v7a+ device (tegra 2/3, HTC, LG) with Android 2.2+
2. [re]install test\_engine\_static\_x86

Do -> verify:

1. start the app -> "Can't load OpenCV native libs. Exiting."

## **Async Test Cases**

General schema: **TC-a-b-c-d-e-f**

HW[a] + OS[b] + Service[c] + bin.apk[d] + GMarket[e] + i-net[f]

(not all combinations are needed)

### **TC-good\_ver-no\_svc-no\_bin**

Summary: install app that calls initAsync(2.4.0) when there are no Engine and binary APKs installed, GMarket is present, internet is enabled.

Preconditions:

1. any arm-v7a+ device with Android 2.2+
2. uninstall OpenCV Engine if found
3. uninstall all the OpenCV binary packages if found
4. [re]install test\_engine\_async\_v240

Do -> verify:

1. start the app -> GMarket is opened, offering OCV Engine installation
2. install OCV Engine -> {TBD: welcome msg}
3. start the app again -> GMarket is opened, offering OCV 2.4.1 libs package installation {TBD: arch options?}
4. install OCV 2.4.1 libs package -> {TBD}
5. start the app again -> "OpenCV is loaded OK"

### **TC-good\_ver-svc-no\_bin**

Summary: install app that calls initAsync(2.4.0) when Engine is installed but no binary APKs present, GMarket is present, internet is enabled.

Preconditions:

1. any arm-v7a+ device with Android 2.2+
2. [re]install OpenCV Engine if found
3. uninstall all the OpenCV binary packages if found
4. [re]install test\_engine\_async\_v240

Do -> verify:

1. start the app -> GMarket is opened, offering OCV 2.4.1 libs package installation {TBD: arch options?}
2. install OCV 2.4.1 libs package -> {TBD}
3. start the app again -> "OpenCV is loaded OK"

### **TC-good\_ver-svc-match\_bin**

**Summary:** install app that calls initAsync(2.4.0) when there the OCV Engine and best matching binary APK are installed, GMarket is present, internet is enabled.

Preconditions:

1. any arm-v7a+ device with Android 2.2+
2. [re]install OpenCV Engine
3. uninstall all the OpenCV binary packages if found
4. install OCV binary packages 2.4.1 for arm-v7a
5. [re]install test\_engine\_async\_v240

Do -> verify:

1. start the app -> "OpenCV is loaded OK"

### **TC-bad\_ver-no\_svc**

**Summary:** install app that calls initAsync(2.4.9) when there are no Engine and binary APKs installed, GMarket is present, internet is enabled.

Preconditions:

1. any arm device with Android 2.2+
2. uninstall OpenCV Engine if found
3. uninstall all the OpenCV binary packages if found
4. [re]install test\_engine\_async\_v249

Do -> verify:

1. start the app -> GMarket is opened, offering OCV Engine installation
2. install OCV Engine -> {TBD: welcome msg}
3. start the app again -> "Unknown OpenCV version. Try to update Service? (Yes/No)"
4. push YES -> {TBD: check updates}, no updates are found
5. start the app again -> "Unknown OpenCV version. Try to update Service? (Yes/No)"
6. push NO -> "Can't load OpenCV libs. Exiting."

### **TC-bad-bad\_ver-no\_svc**

**Summary:** install app that calls initAsync(3.0.0) when there are no Engine and binary APKs installed, GMarket is present, internet is enabled.

Preconditions:

5. any arm device with Android 2.2+
6. uninstall OpenCV Engine if found
7. uninstall all the OpenCV binary packages if found
8. [re]install test\_engine\_async\_v300

Do -> verify:

7. start the app -> GMarket is opened, offering OCV Engine installation

8. install OCV Engine -> {TBD: welcome msg}
9. start the app again -> "Unknown OpenCV version. Try to update Service? (Yes/No)"
10. push YES -> {TBD: check updates}, no updates are found
11. start the app again -> "Unknown OpenCV version. Try to update Service? (Yes/No)"
12. push NO -> "Can't load OpenCV libs. Exiting."

### **TC-good\_ver-svc-compat\_bin-no\_update**

Summary: install app that calls initAsync(2.4.0) when there the OCV Engine and compatible but not best binary APK are installed, GMarket is present, internet is enabled.

Preconditions:

1. any arm-v7a+ device with Android 2.2+
2. [re]install OpenCV Engine
3. uninstall all the OpenCV binary packages if found
4. install OCV binary packages for arm-v5
5. [re]install test\_engine\_async\_v240

Do -> verify:

1. start the app -> a prompt is opened "You have compatible libs, but there are better ones in GMarket. Update? (Yes/No)"
2. push NO -> "OpenCV is loaded OK"

### **TC-good\_ver-svc-compat\_bin-update**

Summary: install app that calls initAsync(2.4.1) when there the OCV Engine and compatible but not best binary APK are installed, GMarket is present, internet is enabled.

Preconditions:

1. any arm-v7a+ device with Android 2.2+
2. [re]install OpenCV Engine
3. uninstall all the OpenCV binary packages if found
4. install OCV binary packages for arm-v5
5. [re]install test\_engine\_async\_v241

Do -> verify:

1. start the app -> a prompt is opened "You have compatible libs, but there are better ones in GMarket. Update? (Yes/No)"
2. push YES -> GMarket is opened, offering OCV 2.4.1 libs package for arm-v7a installation
3. install OCV 2.4.1 libs package -> {TBD}
4. start the app again -> "OpenCV is loaded OK"

### **TC-newer\_ver-svc-bin-update**

Summary: install app that calls initAsync(2.4.1) when there the OCV Engine and 2.4.0 binary APK are installed, GMarket is present, internet is enabled.

Preconditions:

1. any arm-v7a+ device with Android 2.2+
2. [re]install OpenCV Engine
3. uninstall all the OpenCV binary packages if found
4. install OCV binary packages 2.4.0 for arm-v7
5. [re]install test\_engine\_async\_v241

Do -> verify:

1. start the app -> a prompt is opened "You need to update OpenCV Service and binaries from GMarket. Update? (Yes/No)"
2. push YES -> {TBD: check update for service}
3. {TBD}
4. GMarket is opened, offering OCV 2.4.1 libs package for arm-v7a installation
5. install OCV 2.4.1 libs package -> {TBD}
6. start the app again -> "OpenCV is loaded OK"