Instructions for installing and using the Swadloon apps:

Note: The apps are for academic use only.

1. Platform:

Android 4.4.2

2. Apps:

(a) SwadloonDirectionFinding.apk: Swadloon Direction Finding and Displacement Tracking.

(b) PlayUltraSound.apk：Playing sine signals at specific frequency (Default:19000Hz).

3. Installation Requirement:

(a) SwadloonDirectionFinding.apk:

It is strongly recommended for using Nexus 7 as it is tested in our lab. Other devices are not tested and the accuracy of direction finding is not guaranteed.

If you do not have Nexus 7, you can select an android phone, which has gyroscope embedded, and update the firmware of the phone to the latest version (Ideally 4.4.2).

(The best option may be one in Nexus family, such as Nexus 4. Other devices may have different Android API interface, and the result can be totally wrong.)

(b) PlayUltraSound.apk: There is no such limitation on using this app. Almost all the android phones work well with this app.

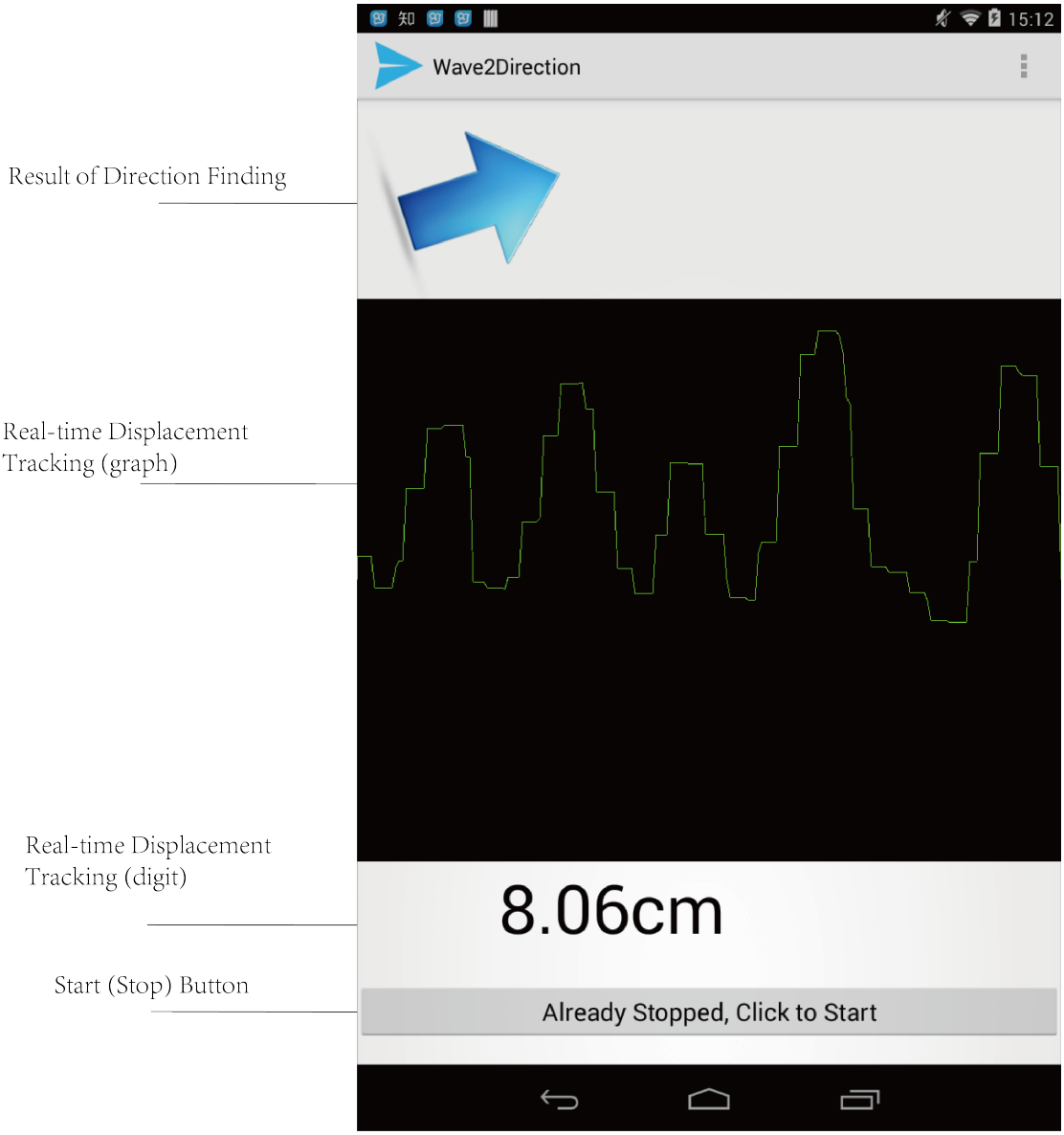
4. Using the apps.

(a) Step1: Install PlayUltraSound.apk on phone A, open the app, and press the "play" button.

The phone A will emit acoustic sine signals at non-audible high frequency (default: 19000Hz). So, if there are audible noises, please turn down the "current Volume" or the system sound volume.

(b) Step2: Install SwadloonDirectionFinding.apk on phone B, open the app, and

Press the start button.

(c) Step3: Shake the phone B or move the phone B to change the distance between the phone A and phone B. Observe the relative displacement shown on the screen. Normally, the displacement will increase when the distance is close.

(d) Step4: If the phone B moves in a rough horizontal plane in step 3, it will show the accurate direction of phone A on the screen once the button on phone B is clicked.