

SnapAid Android app user manual

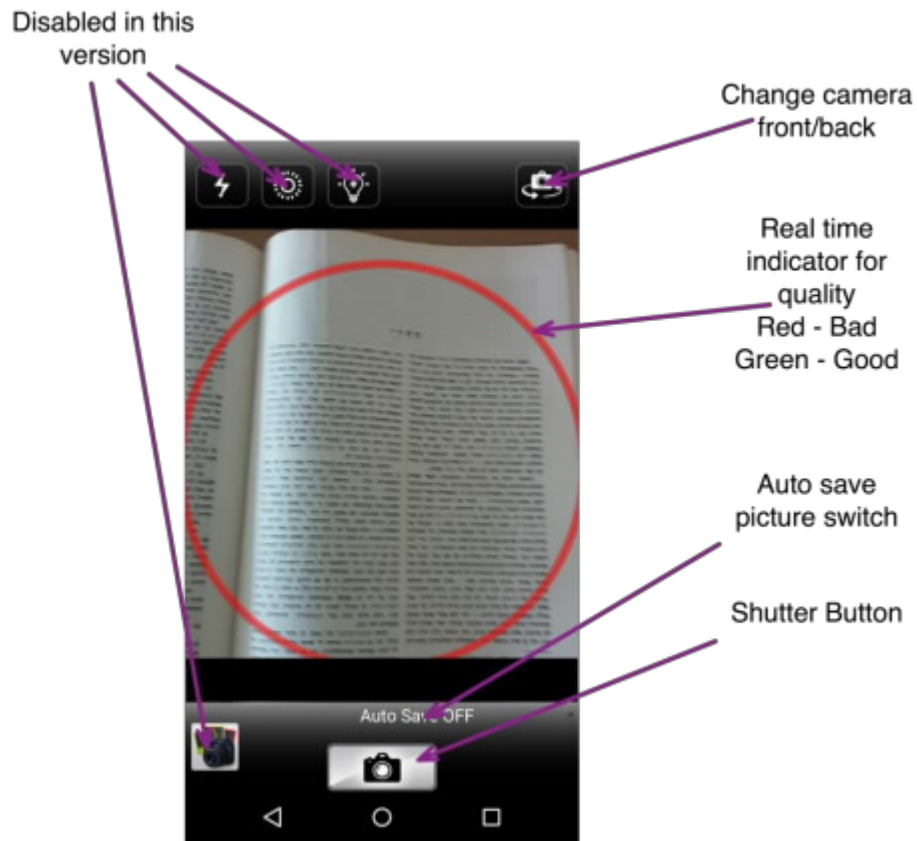
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Android app

SnapAid Android test app requires Android 5.0 and OpenGL ES 2.0 capable hardware. For example tested on Samsung Galaxy S6 & Nexus.

The app is for testing only. The user experience and UI are not intended for end users, but for SnapAid engine demonstration only.

User interface



SnapAid solution for blur free picture

There are several parameters that can cause a picture to look blurred

1. Optical focus not ready
2. Slow shutter speed do to low light
 - a. Movement of the camera
 - b. Movement of the subject

Optical image stabilization only focus solving on 2.a

SnapAid technology evaluates all these parameters together in real time, test their validity (calculate a confidence level for each parameter) and combine them to a total quality indicator. For example, testing the device movement is not just it current inertial movement sensors readout.

When the total quality indicator reads a good picture, than this picture is saved.

Typically, on low light, tapping the phone to take a picture creates a special vibration that can be detected. If the picture is not of high quality, then it probably will be better soon after - 50, 100 or 150 milliseconds later, with no real difference to the user.

Taking a picture via shutter button

Important notes:

Video input coming from the camera is evaluated and analyzed at real time, even before the shutter button is pressed.

The moment the user presses the shutter button an image will be saved in the name “*SnapAidXXX_without_SS_sss.jpeg*”. This is the picture as it was saved without SnapAid, for comparison purposes.

XXX stand for running number for distinction between pictures.

SS_sss is the time of the picture was taken, without the date, hour and minute, just the seconds in that minute (SS) and milliseconds (sss) (For the date, hour and minute we can look at the file details, and they are less relevant)

For example “SnapAid_002_without_23_120.jpg”

After the shutter button is pressed, SnapAid engine will analyze the raw data for the first high quality image opportunity and will save that too. This indicates the real picture SnapAid recommends. This can happen immediately, or under 200 milliseconds later on most cases, depending on conditions. The file name will be “*SnapAidXXX_with_SS_sss.jpeg*”.

The purpose of this naming is the ability to test the difference of quality and the time differentiation – 50ms, 150ms etc.

For example:

[SnapAid_008_without_21 612.jpg](#)



SnapAid_009_with_21 844.jpg



There is a difference of 200ms between the 2 pictures.

There are different sounds indicating each saved picture quality. For the first, at time of shutter button press, there is an "alarm" sound (As said, app is for testing only). For the blur free picture the "notification" sound is played.

If the picture was blur free at the time the shutter button was pressed, the file name will be "SnapAidXXX_WithAndWitout_SS_sss.jpeg". Files are saved at "Storage/Emulated/0/DCIM/SnapAid" folder, and also shown on the picture gallery.

If the Engine can't get to what it considers a "good enough picture" after 2 seconds, and "timeout" picture will be saved. It is possible also to save "the best of" picture for the waiting time. Currently, it is done this way on the iPhone app, not in the Android version you received.

Currently the image saved is of the regular video resolution of the device, 3MP for Samsung Galaxy S6 and 1.5MP (1080x1440) for Nexus5. It can be of a full resolution, it depends the OpenGL texture received. For example on iPhone 6 it is set at 5MP at 15-17 FPS.

“Blur free” doesn’t mean that there is a minimum movement of the device, say under some threshold. It is more complicated then that, and involves quit a few sensors and algorithms and also checks that the **subject** in the picture is not moving.

Auto save mode

The App has an “Auto” mode, taking a picture when the quality is at a certain threshold, currently set to max quality.

If on auto mode, a picture is taken once every 3 seconds, giving conditions are met. If you walk around or wave, it is being sensed and the picture will not be taken. This enables the user to take a “hands free” picture, without pressing the shutter button. Just point it at the right direction. When the picture is taken a sound is played to notify the user.

The auto mode can be turned on or off via pressing the switch or text “Auto Save”.

Best 3 pictures

The engine itself can be configured to save in memory multiple pictures, for example - best 3 pictures taken, even if they didn’t reached the min threshold for saving. This enables us to give the user the best shot from moment of capture to timeout.

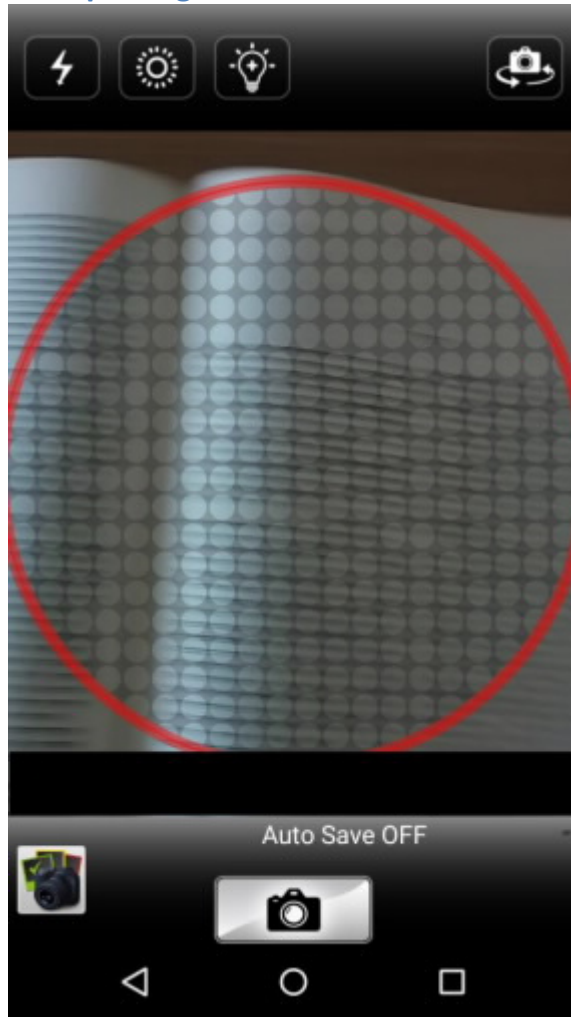
Currently on the Android test app the user is only exposed to the last picture, not the best of X. (Enabled on iPhone app).

SnapAid live recommendations

There are real time indications if the current quality of the picture via colored circles and a semi transparent grid.

If the device moves around too fast relative to the lightening conditions, then a semi transparent grid appear, partially blocking the user live view. This will indicate the problem to the user, but not intrusively.

Example of grid to indicate to user need to hold still



There are compositions test (using rule of third test)but they are disabled in this demo version

Face detection is taken from the OS, so for very dark faces a face will not be recognized by the operating system. Enhancements for the engine to recognize a face rectangle despite OS not recognizing are not released in this test app.

Technical aspect of the technology

SnapAid engine is cross platform, C++ 11 with OpenGL ES 2.0 (for shaders)

Blur related quality indicators

1. Camera module reported optical focus (including AF type)
2. Focus related calculation made on the live image, taking into account the device shake and pointed area at the time (gyro, accelerometer).
Calculation uses previous frames recorded data to establish an adjusted value with confidence checks.

3. Gyro and accelerometer shake data, in conjunction with exposure time and ISO

Exposure related quality indicators

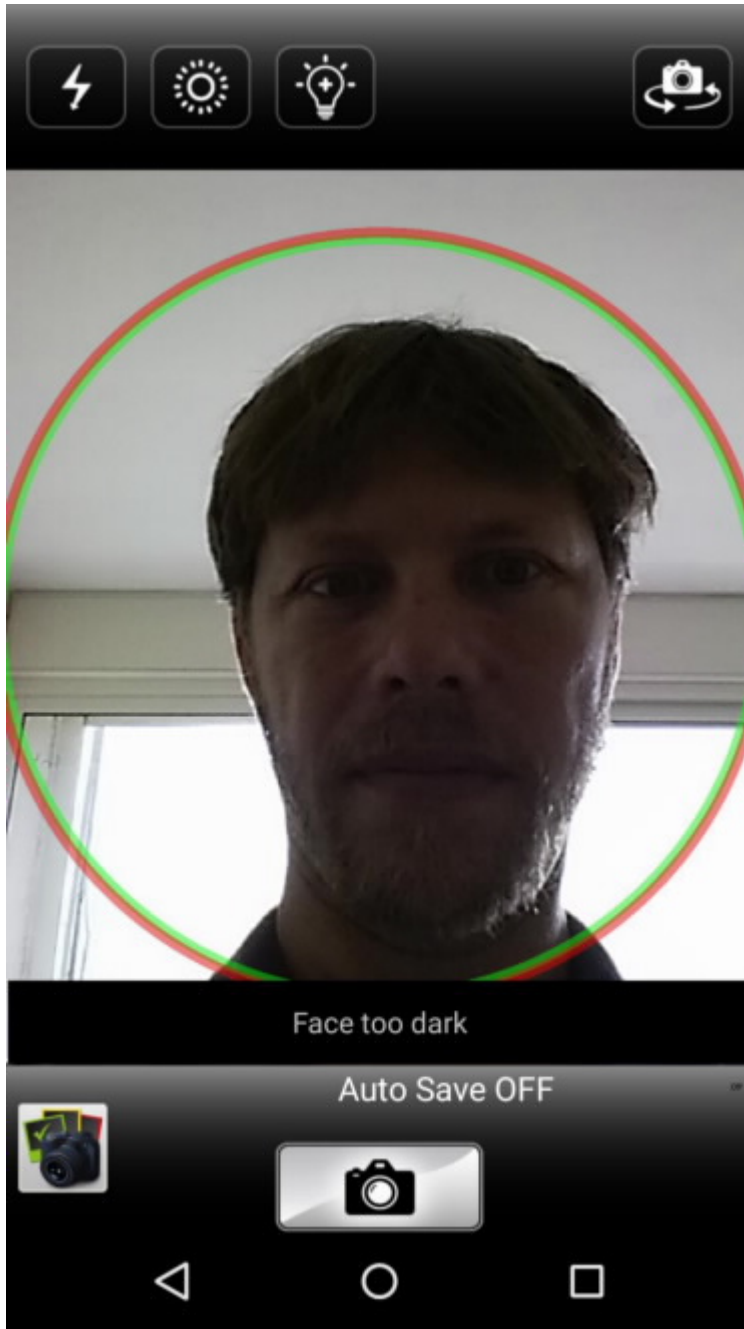
1. Entire image exposure (under/over)
2. Face exposure with sophisticated confidence checks/reflections, etc. (detailed in one of the patent)

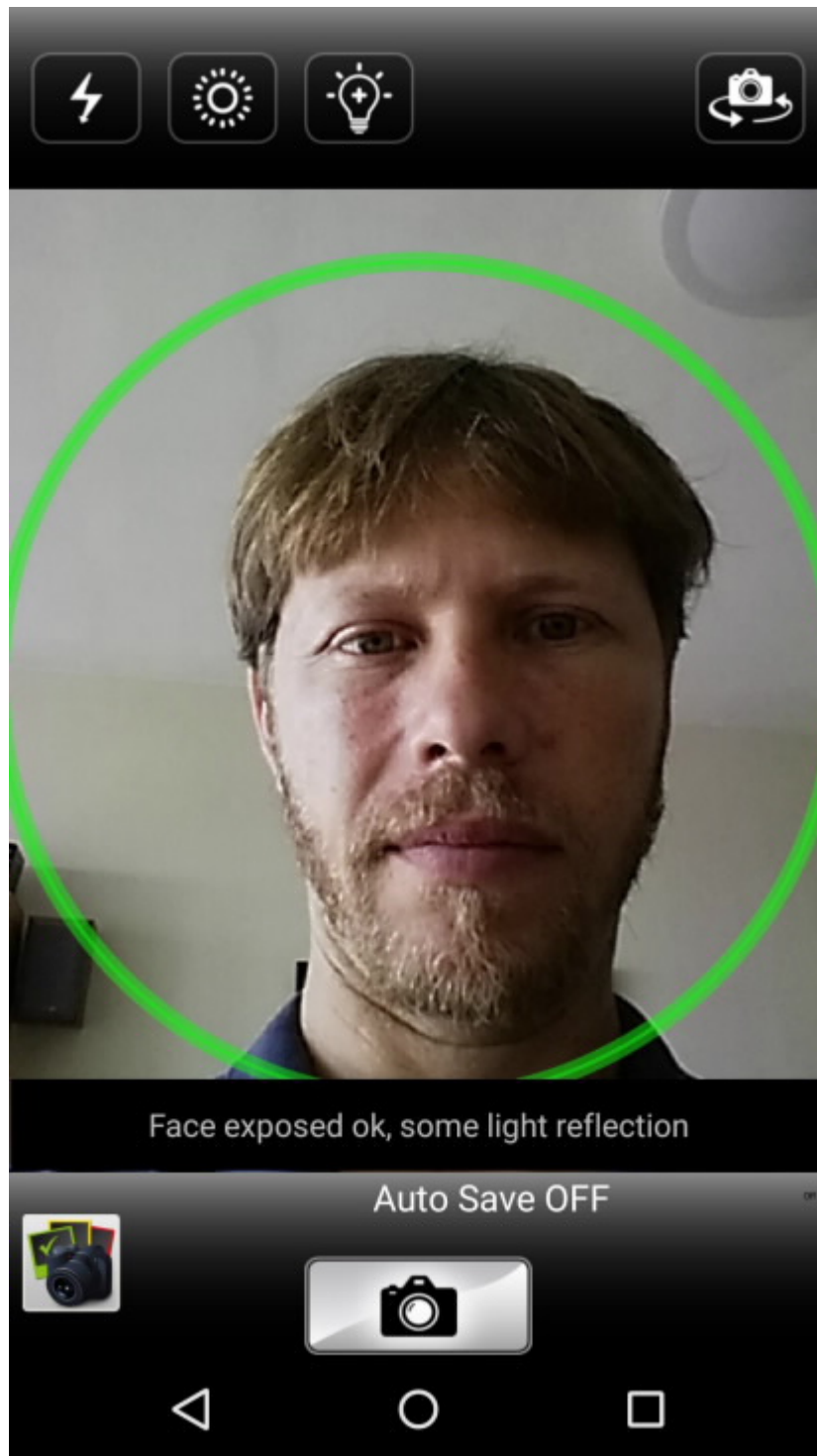
Face Exposure

SnapAid engine also test the face and total exposure and reports to the user if the face in the picture is too dark or unclear. There are various (total of 7) face exposure results, based on lighting (dark, backlight, flare) and confidence level of calculations.

Currently the engine is set at face exist with at least 80% confidence and face exposure quality with at least 70% confidence.

Face exposure examples





Composition

Compositions test are disabled at the moment. They confronts to rule of thirds, a photography principle. (Disabled on demo version)

Advantages over regular burst mode

1. Enables the camera module to keep on searching for AF, AE etc.
2. Choose the best pictures not just by contrast, but sophisticated weighted, confidence aware, cross sensors checks, multiple quality indicators
3. Saves space, as fewer pictures are saved
4. Frees user from holding the shutter button

Contact

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