October 11, 2016

A Mechanism For Making Creation Of Landscape-Oriented Videos More Natural

Scott Atwood

A MECHANISM FOR MAKING CREATION OF LANDSCAPE-ORIENTED VIDEOS MORE NATURAL

ABSTRACT

A method to enable users to naturally create landscape oriented videos by combining the accelerometer function of the mobile device with a slightly modified camera is disclosed. The rectangular sensor of the camera is replaced by a sensor that is square with truncated corners arranged as two overlapping rectangles. While recording the video, the accelerometer will be used to determine the orientation of the mobile device and select which sensor area could be used to record the video. The disclosed device and method allows users to hold their cell phone in the orientation that is most normal and natural for them while still allowing them to record video in the format that is most frequently used for later display and sharing.

BACKGROUND

With the introduction of mobile phones and with the aid of technology, creating and sharing videos has become easy for many users. Most of the video content recorded by users is typically in portrait or vertical orientation because of the nature of the users holding their phones while recording the video. While vertical videos are comfortably viewed in phones, it does not provide the same effect when seen in larger screens such as television screens, laptop screens, computer monitors, etc. Larger screens which are typically set in 16:9 aspect ratio generally display the portrait oriented videos in “pillarbox” effect in which black columns occupy either side of the content. The same “pillarbox” effect is seen when such videos are included in a montage with traditional landscape orientated videos, resulting in loss of resolution of the vertically oriented videos.

DESCRIPTION

The disclosure provides a device and method to enable users to naturally create landscape oriented video content in their mobile phones even when the phone is in portrait mode while the video is being recorded. This is achieved by combining existing accelerometer functionality with a slightly modified camera. Existing cameras with a rectangular sensor that has the same orientation as the device screen is replaced with a sensor that is square with truncated corners, arranged as two overlapping rectangles of the same size as the traditional 4:3 or 16:9 sensor areas as illustrated in FIG. 1.

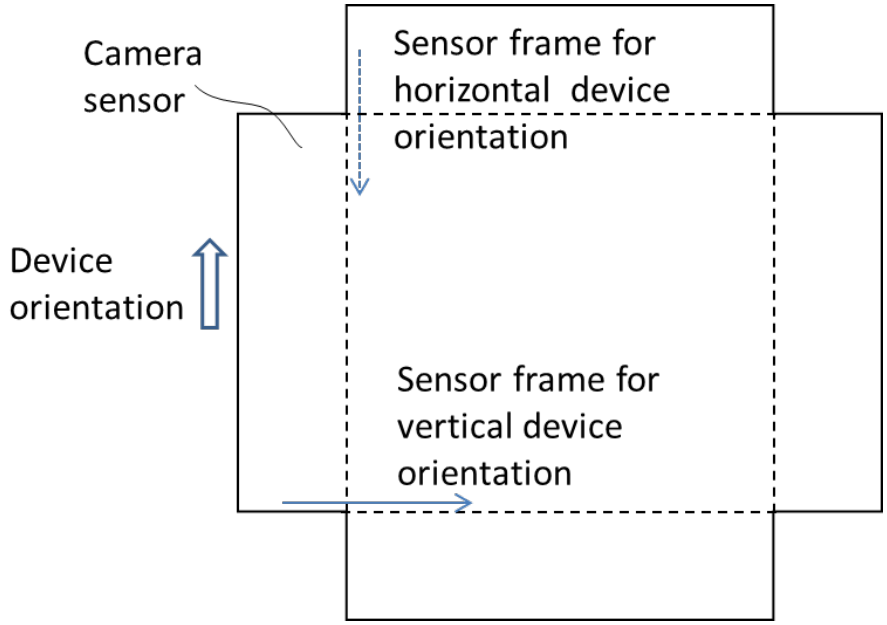

FIG. 1: Camera sensor for providing landscape image orientation in two directions

The accelerometer functionality of the mobile device is utilized to determine the landscape or portrait orientation of the device and thereby determine which sensor area could be used to record the video. The rectangular frame of the sensor is in the same alignment as the device display when the device is held in landscape orientation. When the device is held in portrait orientation, the rectangular sensor frame is orthogonal to the device display, as shown in FIG. 1. In an alternative implementation, the sensor could be a square sensor. If an accelerometer is not used, an option could be provided to manually select sensor orientation.

While recording the video, the user interface of the camera could be rotated to match the orientation of the device. When the device is in portrait mode, the live display as captured from the rectangular frame of the sensor that is orthogonal to the device display may be scaled down to present the video in landscape mode with the horizontal area letterboxed. Optionally, the live display may be partially scaled down and shown with slightly truncated sides, reducing the level of user discomfort. Also, instead of filling the letterboxed area with black, it could be utilized in some other manner so that users will not be led to believe that they are not seeing the full output of the camera sensor.

In an alternative method, with existing devices having rectangular sensors, a rectangular landscape image could be achieved by simply taking a small landscape subset of the sensor that is orthogonally oriented to the natural sensor orientation. However, since only about 30% of the sensor area is utilized in this arrangement, the non-natural sensor orientation would have a significantly lower resolution and it would appear to be significantly “zoomed in” relative to the other orientation. In case the user wants to record a vertical video, they may continue to do so when the feature that locks the screen in landscape orientation is set to be configurable in the camera application on the phone.

The disclosed device and method allows users to hold their cell phone in the orientation that is most normal and natural for them while still allowing them to record video in the format that is most frequently used for later display and sharing. The landscape orientation may also make it more likely for user-generated video content to be shared. The above advantages could be achieved at moderate cost, since only about 20-25% additional sensor area would be required.