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


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Article

Calibration of Action Cameras for Photogrammetric Purposes


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
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Abstract

The use of action cameras for photogrammetry purposes is not widespread due to the fact that until recently the images provided by the sensors, using either still or video capture mode, were not big enough to perform and provide the appropriate analysis with the necessary photogrammetric accuracy. However, several manufacturers have recently produced and released new lightweight devices which are: (a) easy to handle, (b) capable of performing under extreme conditions and more importantly (c) able to provide both still images and video sequences of high resolution. In order to be able to use the sensor of action cameras we must apply a careful and reliable self-calibration prior to the use of any photogrammetric procedure, a relatively difficult scenario because of the short focal length of the camera and its wide angle lens that is used to obtain the maximum possible resolution of images. Special software, using functions of the OpenCV library, has been created to perform both the calibration and the production of undistorted scenes for each one of the still and video image capturing mode of a novel action camera, the GoPro Hero 3 camera that can provide still images up to 12 Mp and video up 8 Mp resolution.

Keywords: [photogrammetry](#); [calibration](#); [undistortion](#); [video](#)

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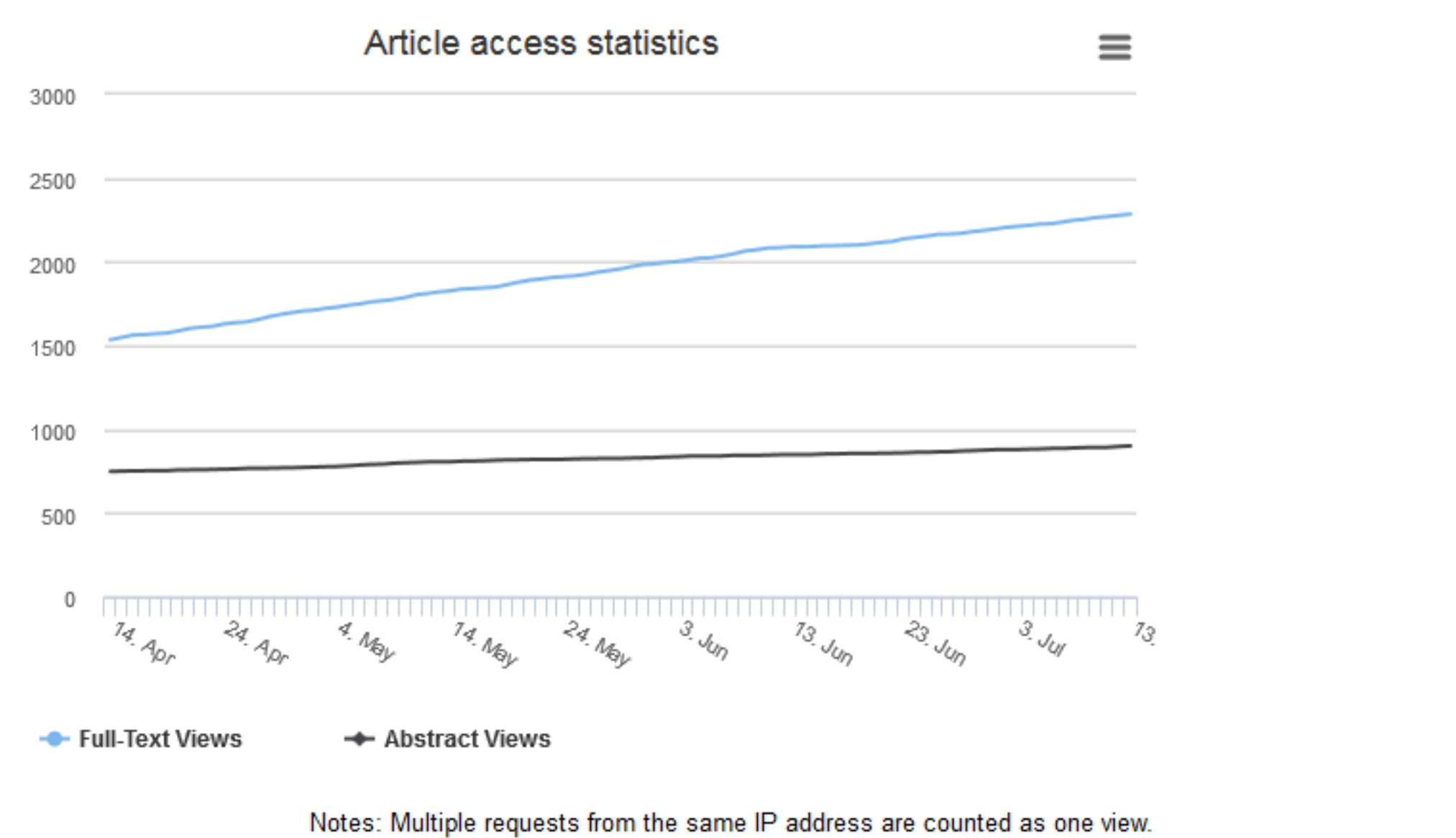
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