of interest (i.e. the area desired to be captured by the camera) images of the ground are being captured at a certain frame rate. During operation of the camera systems, the gimbal assembly can be configured to move the camera around one or more gimbal axes to provide a scanning motion from side to side (e.g. in a sweeping motion across the flight direction) in order to increase the range which is covered by the camera. Multiple images of the ground terrain are captured to be synthetically combined into a single continuous image.

In order to obtain images with good quality characterized for example by adequate sharpness and specifically in order to avoid (or at least reduce) motion-blur resulting from the relative motion between the camera and the objects in the scene, the velocity of the camera movement is restricted.

According to one solution known in the art, camera systems used in aerial photography include mirrors designed to be moved in order to change the point of view of the camera, while the camera movement is restricted.

SUMMARY

The presently disclosed subject matter includes a new camera system for aerial photography applications. The camera system can be mounted on an aircraft and be operated for obtaining images of a surveyed area. The proposed camera system comprises a camera control unit operatively connected to a camera supported by a pivotal supporting device such as a gimbal assembly. The supporting device (referred to herein by way of non-limiting example only also as "Gimbal assembly") is connected to the aircraft and provides the camera with mechanical support and the required degrees of freedom.

During operation of the camera systems, the camera control unit controls the operation of the gimbal assembly and the operation of the camera. According to the presently disclosed subject matter, the camera is continuously moved along the scanning line without stopping (i.e. camera movement velocity > 0) and is operated to capture images in a certain frame rate. As the camera is being moved, the camera control unit is configured to adapt the camera movement velocity (i.e. the velocity at which the camera is being moved) to the current operational mode of the camera. When the camera is in a first operational mode i.e. the camera is being moved while

The camera switches from exposure mode to non-exposure mode. In non-exposure mode the camera is moved along an offset range which is the distance between the current position of the camera, at the end of the exposure mode, to the next exposure point where the next image is captured. It is desirable to move the camera along the offset range to the next exposure point as fast as possible. To this end, during the non-exposure mode the camera is moved according to scanning parameters which enable to move the camera quickly to the next exposure point and bring the camera to the next exposure point at a velocity which is equal to or greater than the maximal velocity threshold.

At block **307** scanning parameters are calculated (e.g. by camera control unit **110**). The scanning parameters include an acceleration range and deceleration range dividing the offset range. At block **309** the camera is moved along the offset range according to the scanning parameters. The camera is accelerated along the acceleration range and then decelerated along the deceleration range, which terminates at the next exposure point. For example, camera control unit **110** can generate and provide instructions to gimbal assembly for controlling the camera movement along the offset range according to the scanning parameters. Operations related to the calculation of scanning parameters are described in more detail with reference to **fig. 5** below.

Fig. 4 is a flowchart illustrating operations performed by camera system **100** for determining maximal velocity threshold, in accordance with an example of the presently disclosed subject matter. Operations described with reference to fig. **4** can be executed for example by maximal velocity threshold calculation module **115** in control unit **110**.

At block **401** information pertaining to a desired pixel resolution range is obtained. The desired pixel resolution range value can be received for example by a human operator or can be pre-stored in data storage unit operatively connected to camera system **100**. The pixel resolution range value defines the desired range on the ground which should project on each pixel in the camera (i.e. the ground surface covered by each pixel).

pixel resolution range for calculating the maximal can help to improve separation between pixels, and reduce blur.

The angular velocity can be calculated based on a range from the camera to the captured area of interest. The camera system can comprise or be otherwise operatively connected to an altimeter and be configured to determine angular maximal velocity threshold value based on linear velocity value and a range value obtained from the altimeter.

Fig. 5 is a flowchart illustrating operations performed by camera system **100** for calculating scanning parameters, in accordance with an example of the presently disclosed subject matter. Operations described with reference to **fig. 5** can be executed for example by scanning parameters calculation module **117** in control unit **110**.

At block **501** field of view (FOV) is determined based on required image resolution and resolution of the sensor of the camera device. Assuming for example that required pixel resolution range is 0.5 and sensor resolution is 500 pixels, the FOV is calculated by 0.5 * 500 = 250 meters, which represent the distance on the ground covered by each frame.

At block **503** an offset range from frame to frame is determined. The offset range is the range of new ground covered in each new frame. According to one example, it can be equal to the FOV. According to other examples, in order to enable the successful stitching of the captured images into one combined image there, an overlap is maintained between consecutive frames. The offset range depends on the overlapping range and equals the FOV minus the overlapping range. For example, if the overlapping range is 20% of the FOV and FOV is 250 meters, the overlap range equals 20% of 250 which equals 50 meters. In this case, the offset range equals 250 – 50 = 200.

At block **505** the acceleration and deceleration range are calculated. According to one example the offset range is divided into two equal halves, one half being the acceleration range and the other half being the deceleration range.