CLAIMS

1. A field depth perception system including:

a primary digital camera in operative communication with a processor-based system;

a pair of secondary digital cameras in operative communication with the processor-based system, the secondary digital cameras being located on either side of the primary digital camera;

the sensor of each secondary digital camera being directed away from the direction of the primary digital camera sensor, each secondary digital camera field of view partly overlapping the primary digital camera field of view; and

the processor-based system being programmable by instructions for generating a wide field view three-dimensional output image generated from images simultaneously acquired by each one of the primary and secondary digital cameras;

wherein a support frame with primary and secondary digital cameras is first attached to a suitable part of an unmanned aerial vehicle (UAV) such that the primary digital camera sensor is aligned with the UAV’s default direction of travel and the secondary digital camera sensors are directed away in either direction of the primary digital camera and such that a 180° field of view images is acquired by the primary and secondary digital cameras; and

wherein the instructions further including generating three-dimensional depth values by comparing a base-line image acquired by the primary digital camera to images synchronously acquired by the secondary digital cameras, the depth values being acquired from the overlapping fields of view of the images.

2. A system according to claim 1, wherein each of the secondary digital cameras is located on either side of the primary digital camera at a location behind the primary digital camera.

3. A system according to claim 1 or claim 2, wherein the primary and secondary digital cameras and the processor-based system are fixed to the support frame.

4. A system according to any one of the previous claims, the instructions further including synchronising the primary and secondary digital cameras and assigning a time stamp to each simultaneously acquired image acquired from one or more of the primary and secondary digital cameras.

5. A system according to claim 4, the instructions further including warping and clipping an image synchronously acquired by each of the primary and secondary digital cameras, the images being warped and matched to each other and rectified to produce a single wide field image.

6. A system according to claim 1, wherein prior to generating three-dimensional depth values the images synchronously acquired by each of the primary and secondary digital cameras are warped and matched to each other and then rectified to produce a single wide field image.

7. A system according to any one of the previous claims, the instructions further including calibrating the primary and secondary digital cameras before warping and matching the images to each other.

8. A system according to any one of claims 1 and 6-7, wherein the three dimensional depth values are calculated by means of a hardware accelerator.

9. A system according to any one of the previous claims, the instructions further including a mapping algorithm.

10. A system according to any one of the previous claims, the instructions further including a tracking algorithm.

11. A system according to any one of the previous claims, the instructions further including a SLAM algorithm.

12. A system according to any one of the previous claims, the instructions further including an object detection algorithm.

13. A system according to any one of the previous claims, the instructions including an object recognition algorithm, the algorithm excluding the step of generating three-dimensional depth values.

14. A system according to any one of the previous claims, wherein the processor-based system forms part of a distributed system.