

Book Review: So You Want to Create Maps Using Drones?

Calvo K. (2015)

Lighting Source UK Ltd. 70pp.

Reviewed by:

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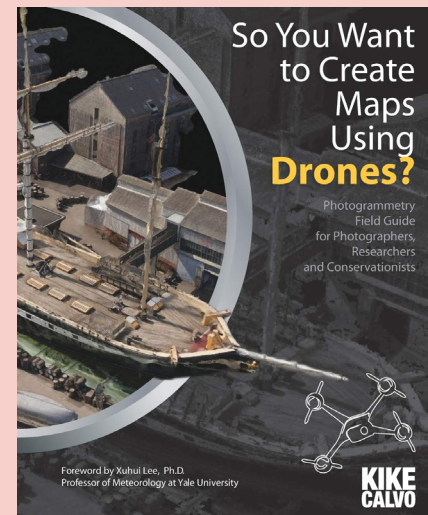
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A new tool to collect aerial photography is the unmanned aerial vehicle (UAVs or Drones) that obtains the set of photographs and put them into the process. The photogrammetry creates a 3D modelling if it is updated. Eventually, the book's contents may not be up-to-date. However, the overview of the content gives the readers the basic meanings of keywords compared to creating 3D modelling forms of photography. The direction of tool development is also along with case-studies for easy understanding. Even though at the beginning of the book is hard to understand what has been communicated, the middle and end of the book describe the content quite well. It has an example of work to show the overall clarity.

To illustrate this book in detail, it has consisted of the introduction of a photogrammetry field guide for the readers in three parts, the first part is an introduction to aerial photogrammetry, which its new software usually benefits cameras placed on drones. The second is how to prepare a variety of flight plans and gear up at a light, and the way of a low cost. The third is how to be a fly, take a photograph, take an image process, and how the creation has been stitched together and the final is a valuable comparison of the best drones for a suitable mapping process. In general, every page has displayed helpful diagrams and insightful photos.



Since the first part contains about what photogrammetry is, therefore it describes the meaning and understanding of the basics of creating a 3D Model from aerial images. (Show in **figure 1**) The explanation of overlapped adjacent photos from aerial images also can be found. In addition, close-range photogrammetry (CRP) has been mentioned as different from aerial photogrammetry. Furthermore, this book suggests the applications of photogrammetry, and necessary skills, and provides its history. Moreover, photogrammetry can be used for creating a variety of exciting designs in 3D scene scanning and applications such as video games and movie creation.



Figure 1. Point cloud of a building showing mapping results of oblique imagery© Pix4D (Source: Calvo, 2015, p.28)

In terms of the second part, it contains the idea of transforming two-dimensional images into three-dimensional ones, which captivated their attention from minute one. Additionally, the Pix4dmapper has been used in this book as the primary option. The aerial photogrammetry workflows have also been explained such as preparing flight plans, preparing gear, on-site checks, data acquisition (aerial images), processing, and using or analyzing the mosaic and DSM. The camera settings have obtained the Ground Sample Distance (GSD), which is the distance of pixel centers measured on the ground. The accuracy has been explained the proportional to the Ground Sample Distance is the distance between two consecutive pixel centers measured on the ground. The bigger the value of image GSD, The lower the spatial resolution of the image and the less visible detail. Additionally, it also explains about making realistic digital models in which drones can fly over an area and then capture images continuously. The images are then matched and stitched together to create an accurate geographical reproduction. The results of this method can be used by scientists, geographers, architects, artists, and beyond as they provide the processing of images, and the software will proceed with the following steps in initial processing, point



Figure 2. 3D point cloud view of Chillon Castle's lake-side.© Pix4D (Source: Calvo, 2015, p.67)

cloud densification & Mesh, DSM and Orth mosaic, other additional processing steps, and finally mentions a few challenges such as lack of adequate ground control, using a wrong sensor type, lack of adequate overlap and side lap for stereoscopic coverage, lack of calibration data for aerial sensors, and inattention to accuracy requirements and standards.

The third part contains the best drones for mapping. (Show in [figure 2](#)). This book illustrates sample drones such as Aeryon SkyRanger Mapping Edition, Aero-M, DT18 UAV, DT26X, eBee, Exom Inspire1, Phantom 3 Professional, Lancaster MK III Rev4, Tayzu Titan X8, and X8-M. A selected list of companies that have developed photogrammetry software such as Acute 3D (Smart UASC Capture), Agisoft Photoscan Pro, Autodesk Mememto, and Pix4D Pix4Dmapper Pro, Trimble UAS Master, and DroneMapper (Online service).

This book is a good sample for creating a 3D model from aerial photogrammetry, which is suitable for scientists, geographers, architects, and artists. This is a guide to knowing and understanding the process. It can also be used for hobbies or to continue in research compared to the book of Waiyasurasingh, which sometimes use similar terms and some words may be for someone who has knowledge or experience in this field only to understand. Although this book was released in 2015, the content is still up-to-date. It contains examples of works that reflect the application of various conductive processes to form 3D shapes, which can be further developed in research, both in surveying, and creating 3D modelling, such as creating 3D modelling at Chillon Castle in Switzerland, which can be used as a guideline for further research work. To this day, writing the same type of book should use the same knowledge of this book to be understandable and have fun while reading.

Reference

- Calvo, K. (2015). *So You Want to Create Maps Using Drones?* Milton Keynes UK: Lighting Source UK Ltd.
- Waiyasurasingh, C. (2020). *photographic survey Photogrammetry*: SE-EDUCATION, Plc.