Principles of Photogrammetry – 2016

WUHAN UNIVERSITY

Assignment 1 – Close Range Photogrammetry Exercise Using Photomodeler

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Aim

1. To take a set of photos from a camera of your choice of a building façade on Campus.
2. To calibrate the camera used for the photography
3. To produce a textured 3D model of the building façade based on the close range photogrammetry software package Photomodeler.

Instructions on Fieldwork

1. You can use any camera for the photography, even a phone camera if you have nothing else available, but a good quality camera is preferred.
2. The photography can be taken of any building on Campus, but 2 options are suggested, the Cafeteria west of the LIESMARS building, and the building housing the 'Old Street BBQ' north west of LIESMARS.
3. Take at least 3 images of the building as shown below and remember that any point you want to map using the software must appear on at least 2 images.
4. Each image should show the complete building façade where possible. Use a small aperture on the camera for the photography, of the order of f11 and set the focus at infinity. This should ensure sufficient depth of field and hence the whole object should be in focus.
5. Measure the distance between 2 prominent points as far apart as possible on the building with the measuring tape to establish the scale of the building from the images. These points should be visible on all 3 images. Measure an additional distance for use as a check. (Take a 30 m measuring tape into the field to measure a distance on the object.)
6. Sketch and record the locations of these scale points. Take field notes with a sketch of the building showing approximate camera stations and ensure you record your image numbers.

Top View (Plan)
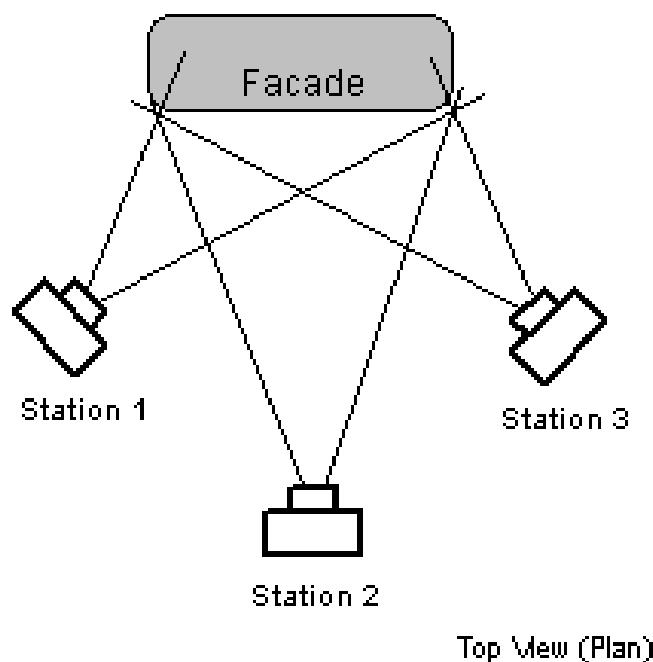
Processing of the images

The processing should be done with Photomodeler, which is a commercial software package marketed by Eos Systems Inc. designed specifically for close range applications of photogrammetry.

1. Go the **www.photomodeler.com** and in the top right-hand corner click '*Download*' and install the software. Note that the software is about 100 Mb so it may take some time to download. The software will be available for 10 days free of charge.

2. Activate the software from the Icon on your Desktop. Watch the videos for '*Multi-sheet Camera Calibration'* and '*Marking and Referencin*g' . You may wish to watch other videos as well to understand the full capabilities of the software.

3. The camera can be calibrated using Photomodeler, following the multi-sheet procedures. This is recommended, but optional. Take images of the calibration charts (printed from the *File* menu), and process the calibration.

4. Carry out the marking and referencing, the computation of the orientation, 3D display and add the textured building façade.

5. You can either send your output to me or show the results to me on your screen **Wednesday 9 November 2016**.

Prof John Trinder

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