Generation of True Orthoimage with Aerial Photographs and DIDAR set

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Outline

1. Problems for orthoimagery
2. Strategy
3. Occlusion map
4. Implementation of true orthoimage
5. Results

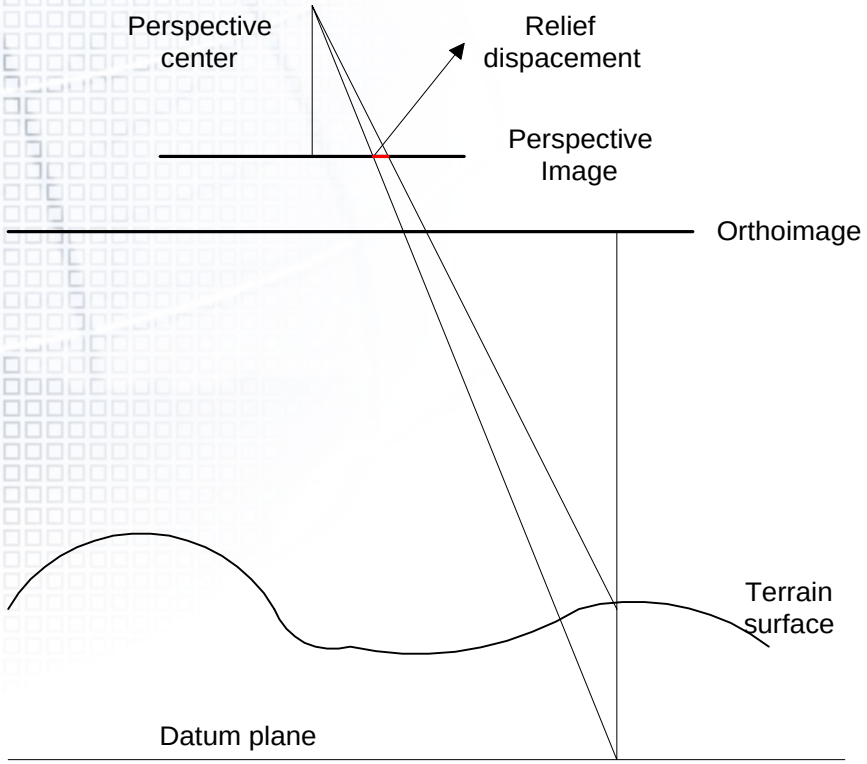
1. Problems for orthoimagery

- Rectification is the process of generating vertical photographs, tilt displacements are eliminated in the rectified image

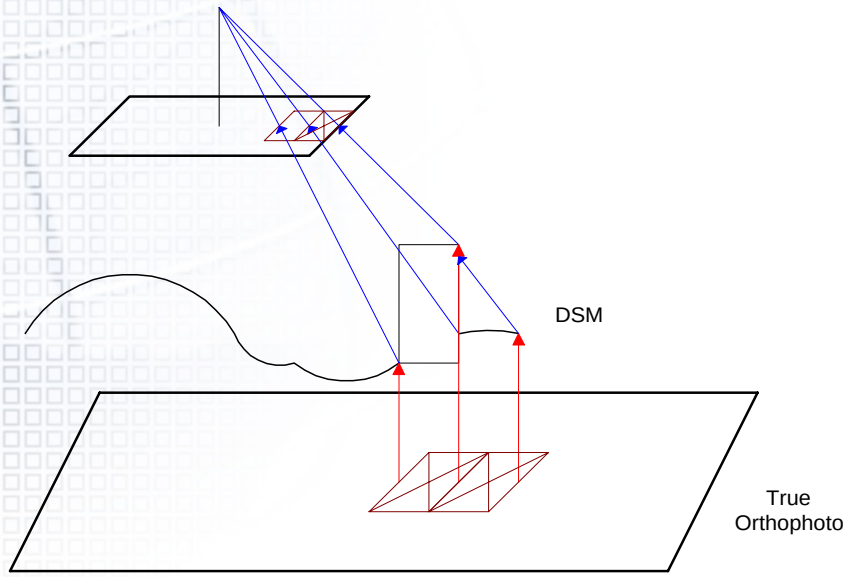
- Orthorectification is the process of removing not only a tilt displacement but also a relief displacement, and the resultant product of orthorectification is called as orthoimage

1. Problems for orthoimagery(cont'd)

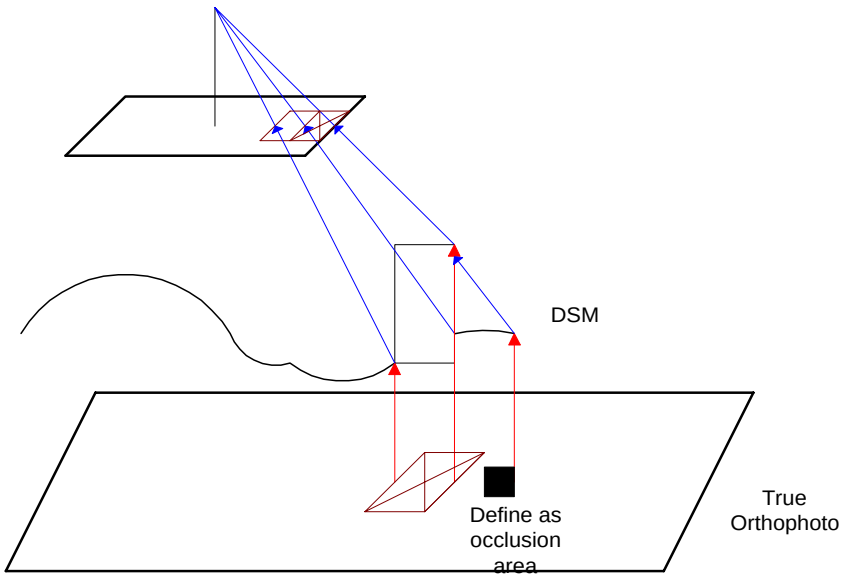
- Principle of orthoimage



1. Problems for orthoimagery(cont'd)



True orthophoto w/o considering occlusion area



True orthophoto w/ considering occlusion area

1. Problems for orthoimagery(cont'd)

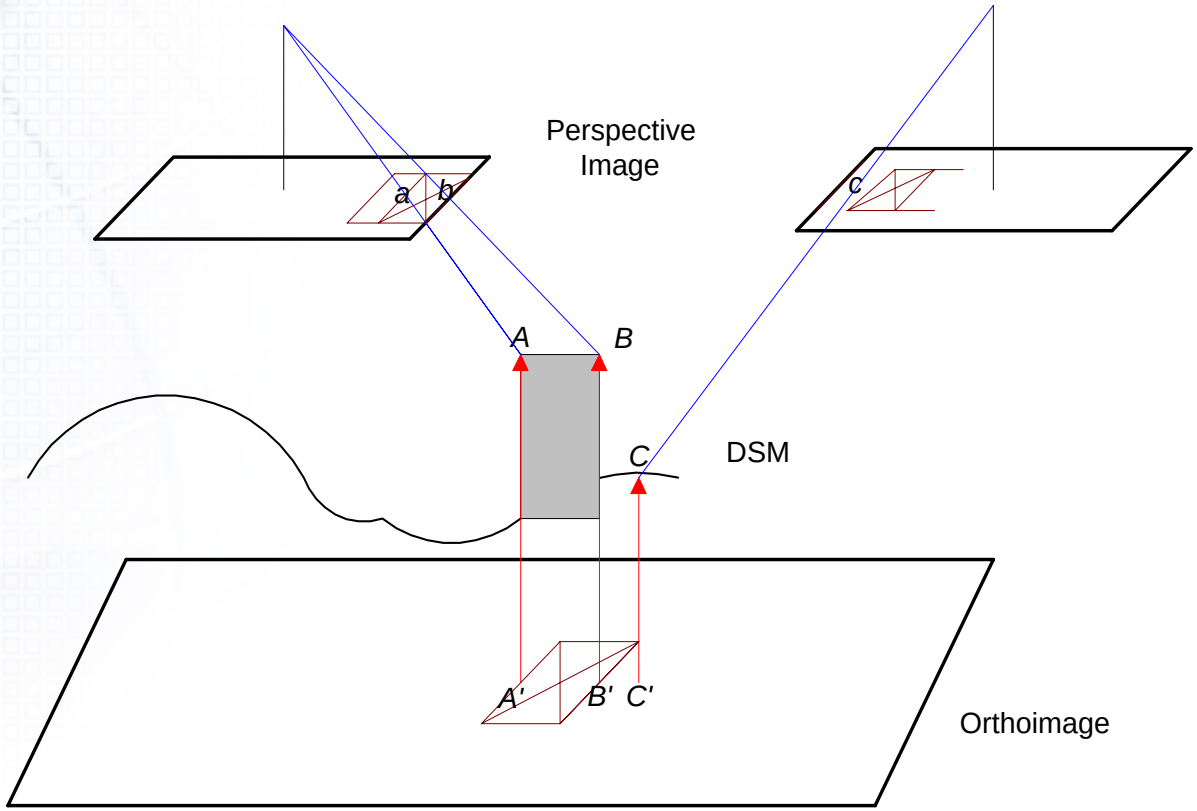
Original Image

True orthophoto w/o considering occlusion area

- Challenge!

  How to detect the occlusion area and how to fill it

1. Problems for orthoimagery(cont'd)

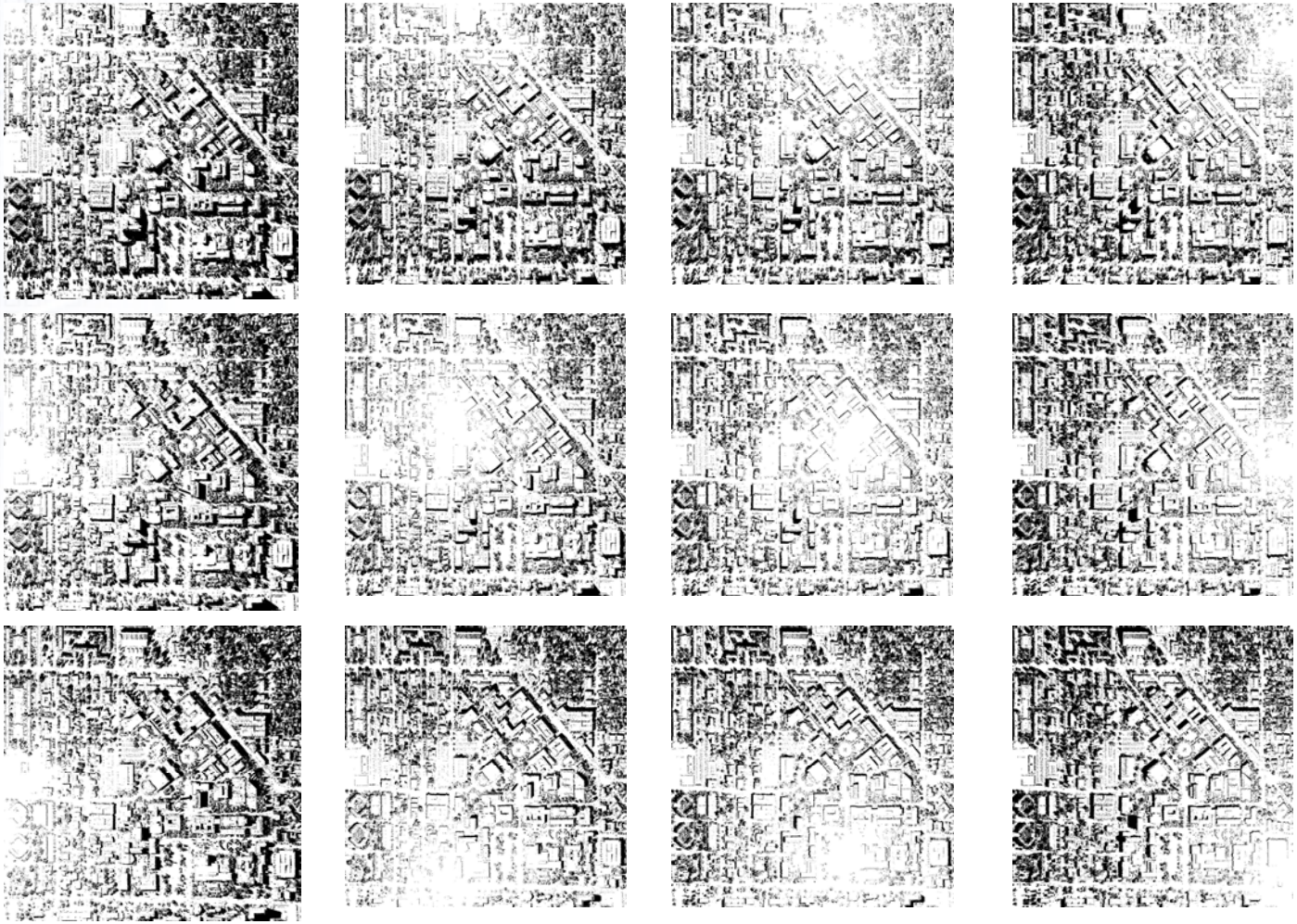


Ideal case for true orthoimage

2. Strategy

- → Considering certain camera exposure station and current DSM grid, if there is obstacle between two points, then the current grid is set as occlusion area with such camera
- → Determine visible or occluding to the all DSM grid and make a occlusion map
- → Repeating upper procedures for all cameras
- → For each DSM grid, we can know which camera is needed for our goal - visible grid
- → If any camera can’t make a grid visible, they will set as occlusion area

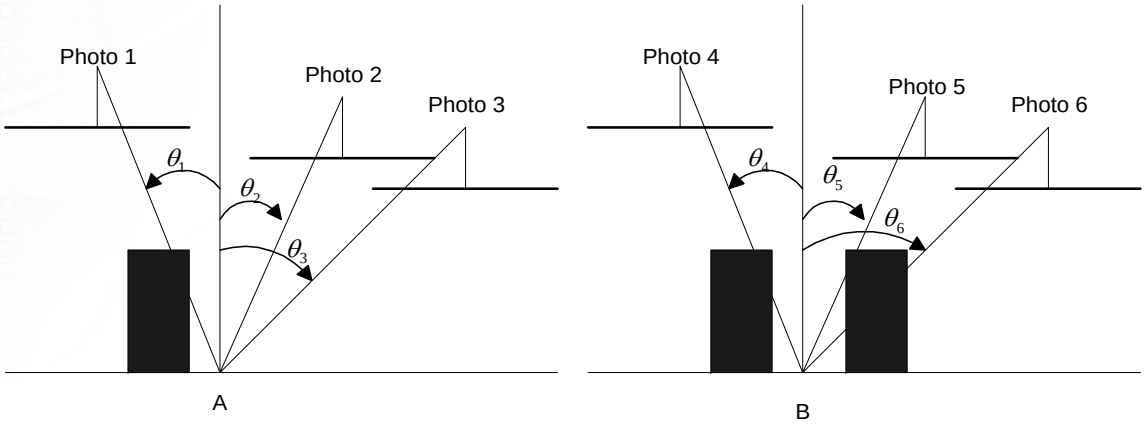
3. Occlusion map



4. Implementation of true orthoimage

1. determine the ground coordinate. The *X, Y* ground coordinate is predetermined and *Z* coordinate is provided by DSM
2. select suitable one photograph for interesting point among the aerial photographs

→among the visible photograph from the occlusion map, select the nadir looking image



3. With X,Y,Z and EO for selected imagery, calculate the corresponding DN and store it to the ortho image

4. Result

4. Result (cont'd)

4. Result (cont'd)

4. Result (cont'd)