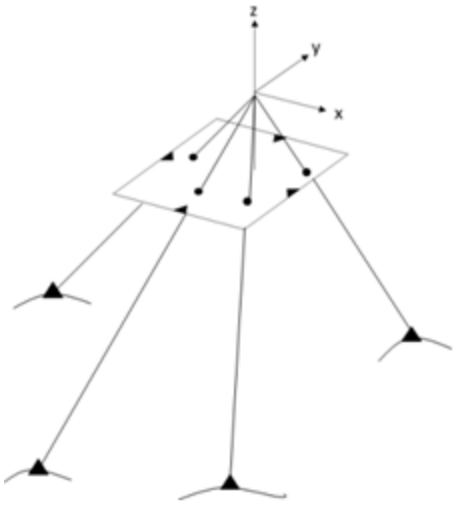
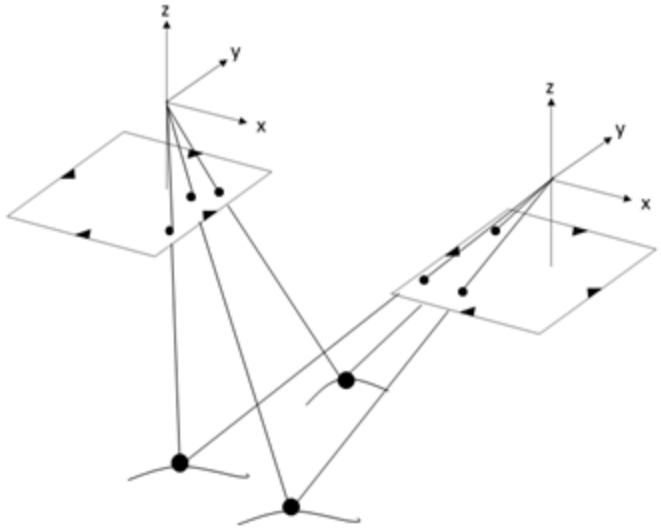
Indirect Image Orientation



Single image



Stereo image pair

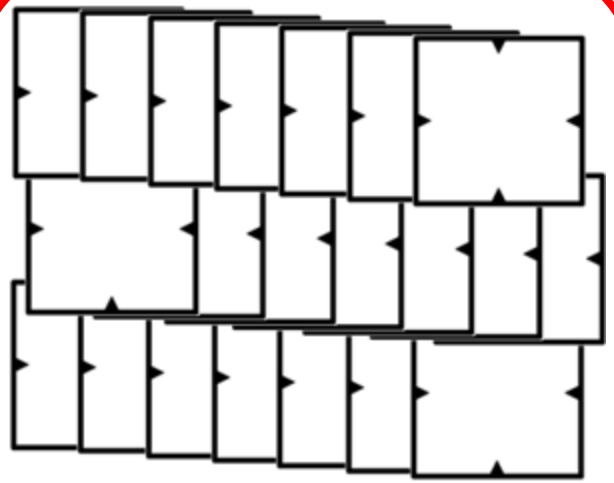


Image block

Indirect image orientation

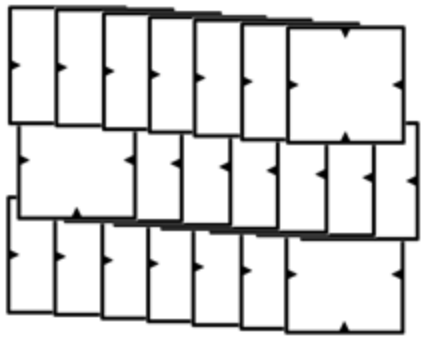


Image block

Aerotriangulation (AT)

RO

GCPs

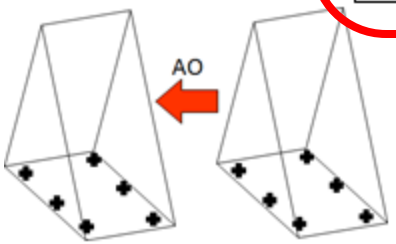
Bundle block adjustment

GCPs

Sequential AO

Simultaneous AO

Strip adjustment



Generate DEM

Orthoimage production

Stereoscopic mapping

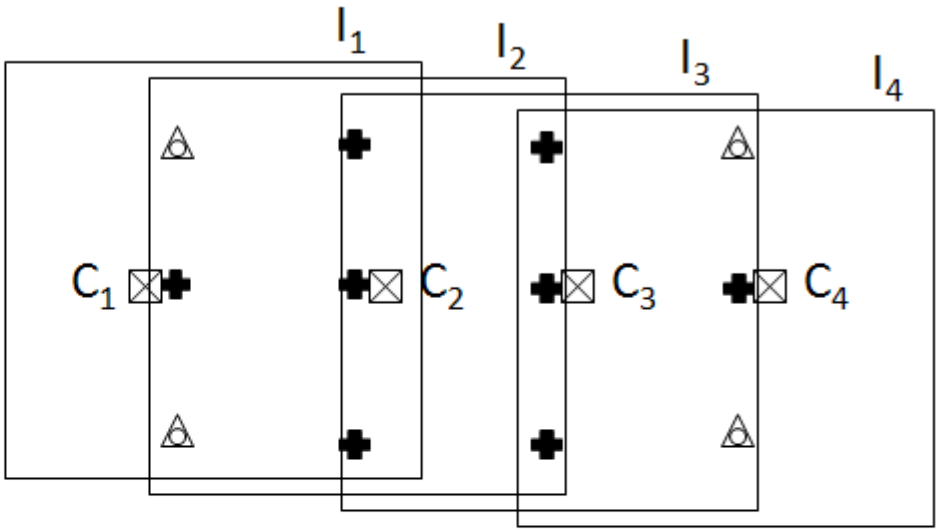
Image Layout for Examples

PC

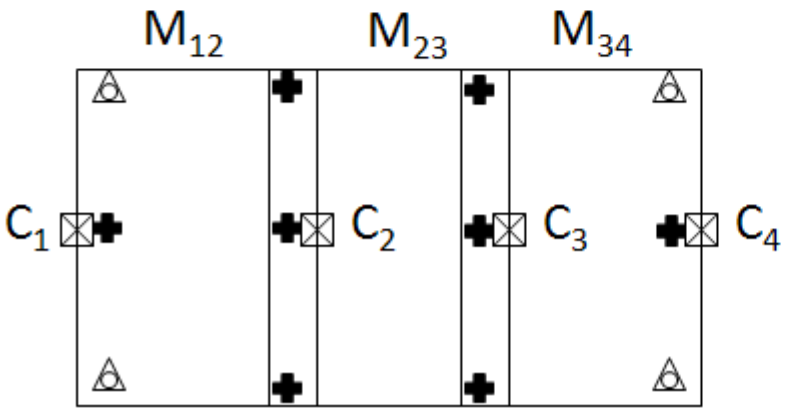
Pass Point

3-D Control Point

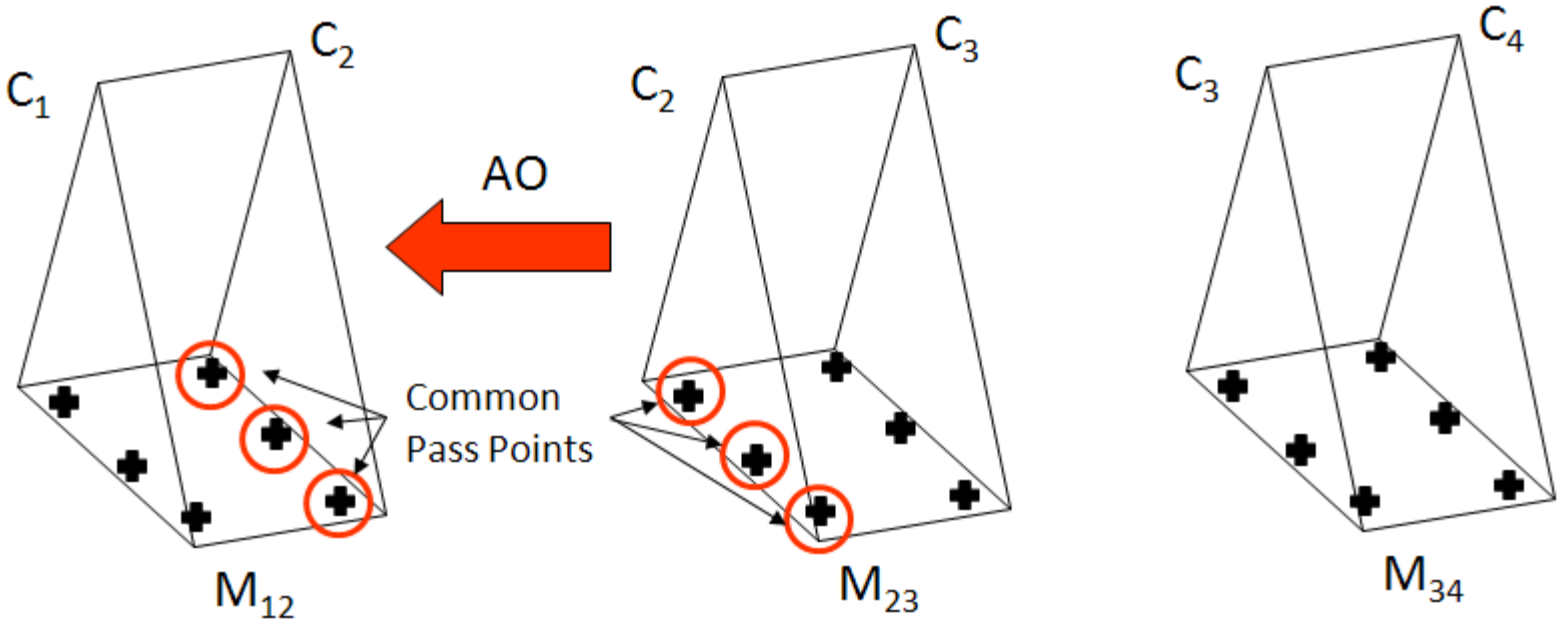
Image Layout



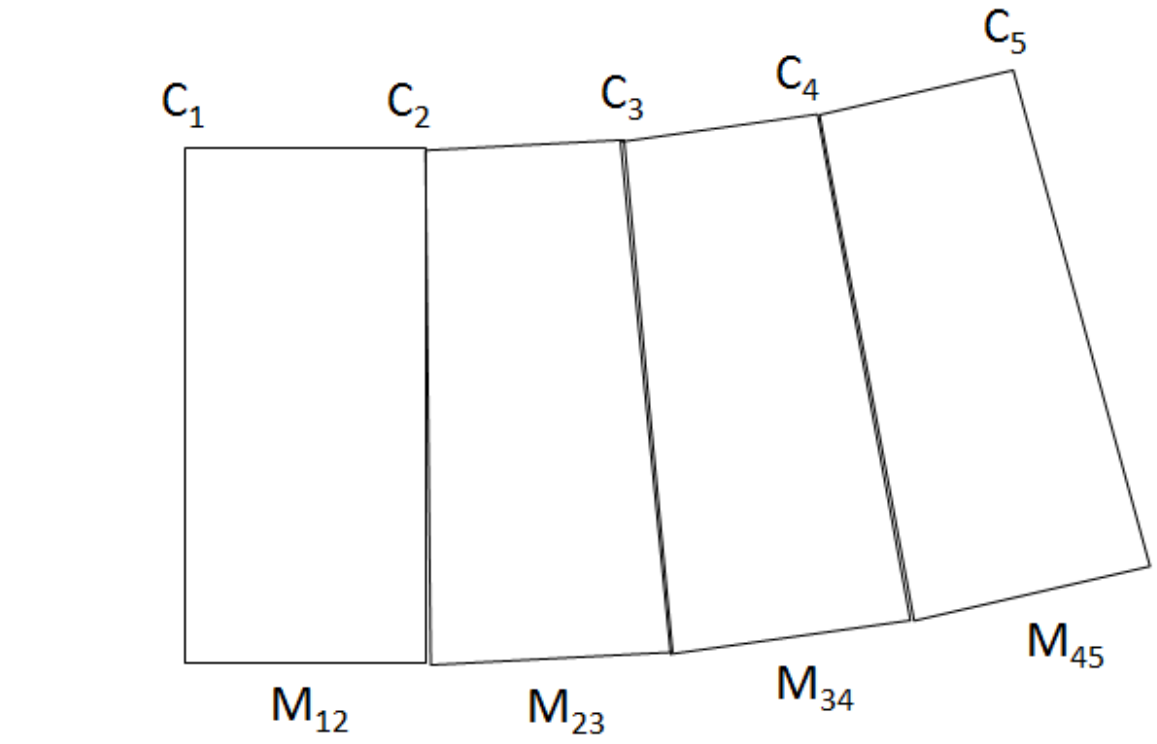
Model Definition

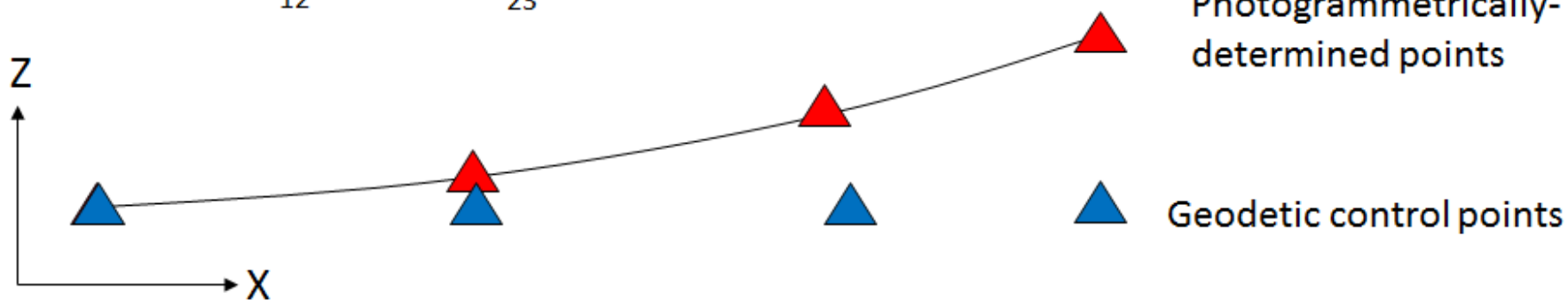


Sequential Construction



Strip Adjustment



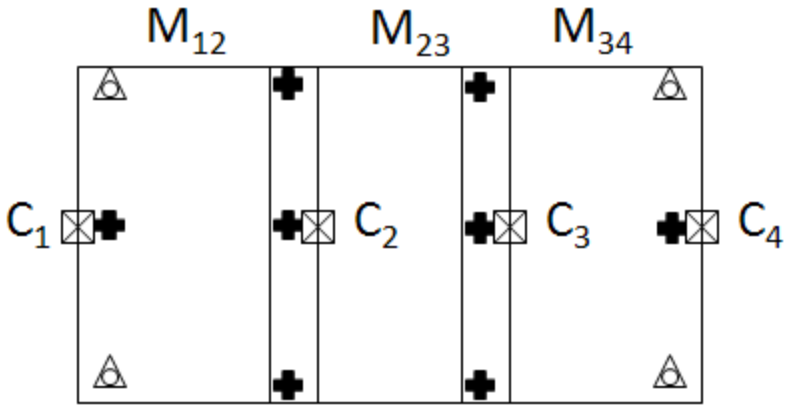


Simultaneous Transformations

PC

Pass Point

3-D Control Point



Observations	GCPs	4 x 3	12
	Tie points—ground	6 x 3	18
	Tie-points—PCs	2 x 3	6
	Total		**36**
Unknowns			
	AO parameters	3 x 7	**21**
Redundancy			**15**

Summary of Equations

- Simultaneous transformations
  - 3D GCP g in model M_{ij}

$$\vec{r}_g^{\,o} = \lambda_{ij} M_{ij} \vec{r}_{g_{ij}}^{\,m} + \vec{t}_{ij}$$

  - Tie point h in models M_{ij} and M_{jk}

$$\vec{r}_{h_{ij}}^{\,o} - \vec{r}_{h_{jk}}^{\,o} = 0$$
$$\lambda_{ij} M_{ij} \vec{r}_{h_{ij}}^{\,m} + \vec{t}_{ij} - \lambda_{jk} M_{jk} \vec{r}_{h_{jk}}^{\,m} - \vec{t}_{jk} = 0$$

  - PC c in models M_{ij} and M_{jk}

$$\vec{r}_{c_{ij}}^{\,o} - \vec{r}_{c_{jk}}^{\,o} = 0$$
$$\lambda_{ij} M_{ij} \vec{r}_{c_{ij}}^{\,m} + \vec{t}_{ij} - \lambda_{jk} M_{jk} \vec{r}_{c_{jk}}^{\,m} - \vec{t}_{jk} = 0$$