



Preprocessing methods used for Poznan 3D/FTV test sequences

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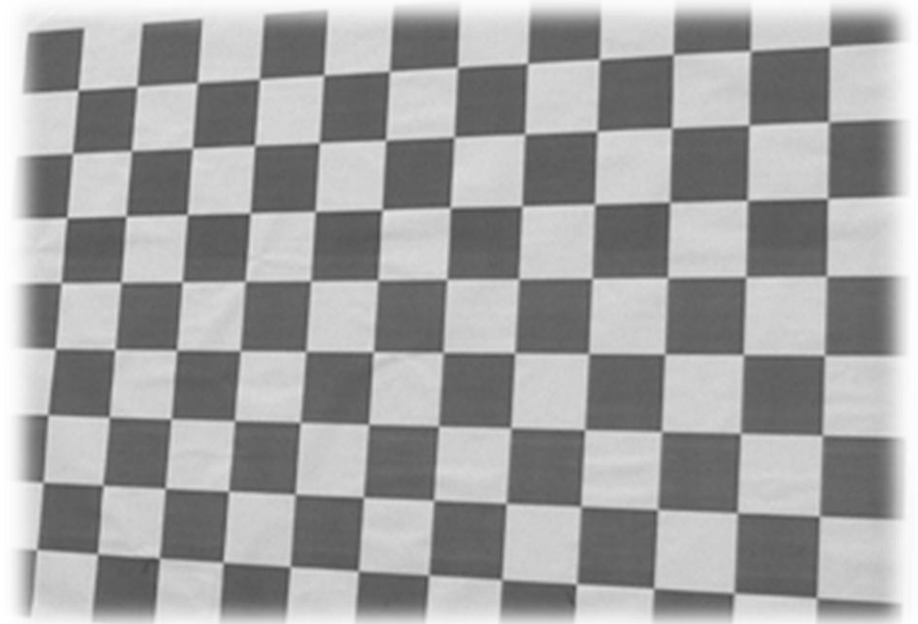
Preprocessing stages

- Geometric rectification
 - Calibration pattern and sequences capturing
 - Camera parameters estimation
 - Rectification parameters calculation
 - Image transformation
- Color correction
 - Histogram generation and calibration
 - Color transformation



Camera parameters estimation

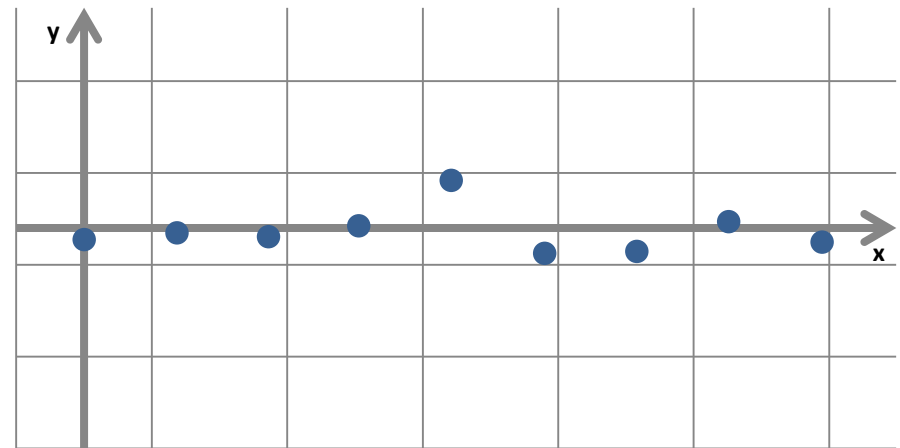
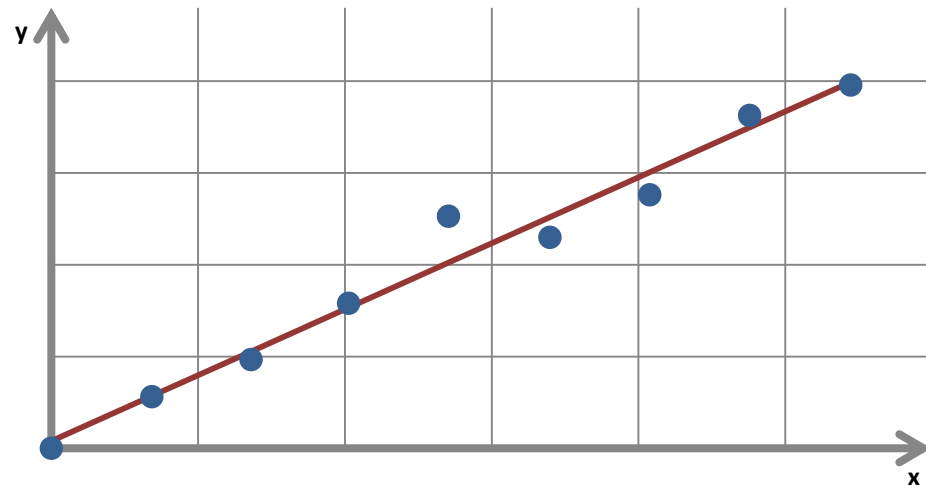
- Chessboard calibration pattern
- Independent sequences for each camera - intrinsic and distortion
- Simultaneous calibration pattern capturing - translation and rotation





Camera parameters transformation

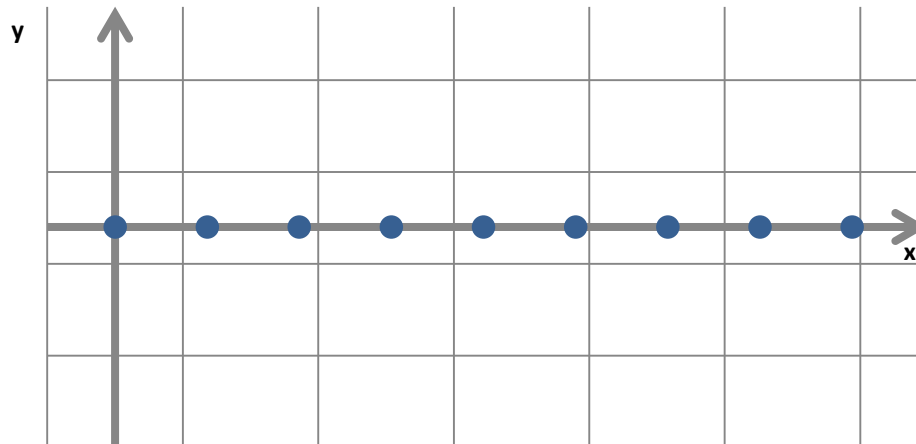
- Relative rotation and translation matrices in camera 0 coordinate system
- New independent coordinate system
 - linear regression





Rectification parameters

- Target intrinsic, translation and rotation matrices:
 - Optical centers projected on to x axis
 - Equal rotation, average intrinsic





Rectification parameters

- Transformation matrix for two groups of corners:
 - Found on chessboard image
 - Projected using target cameras parameters

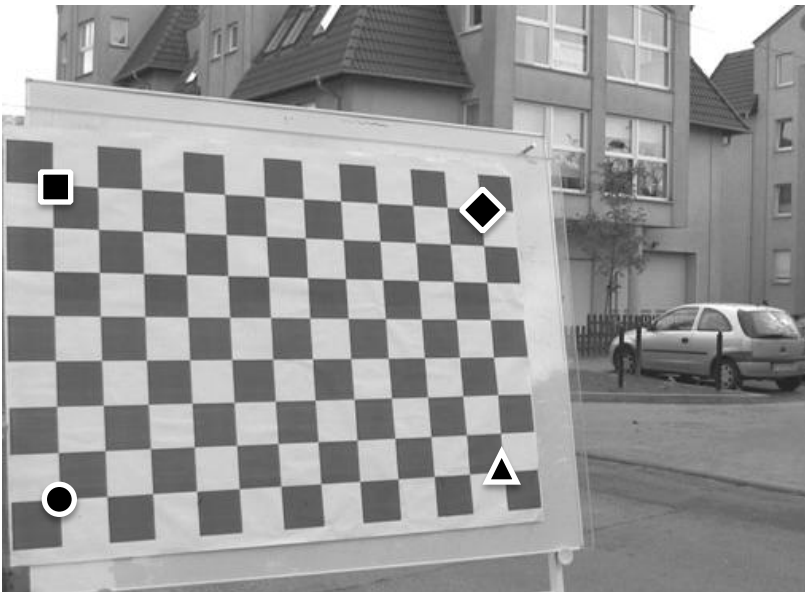




Image transformation

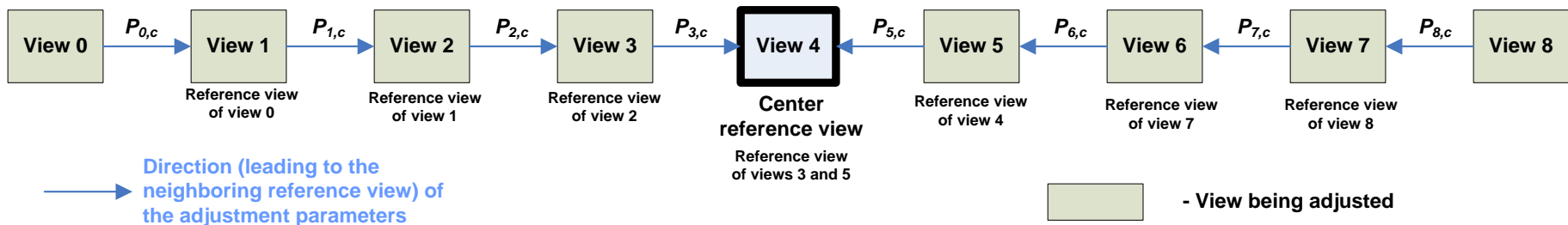
- Distortion correction
- Perspective transformation





Histogram calibration

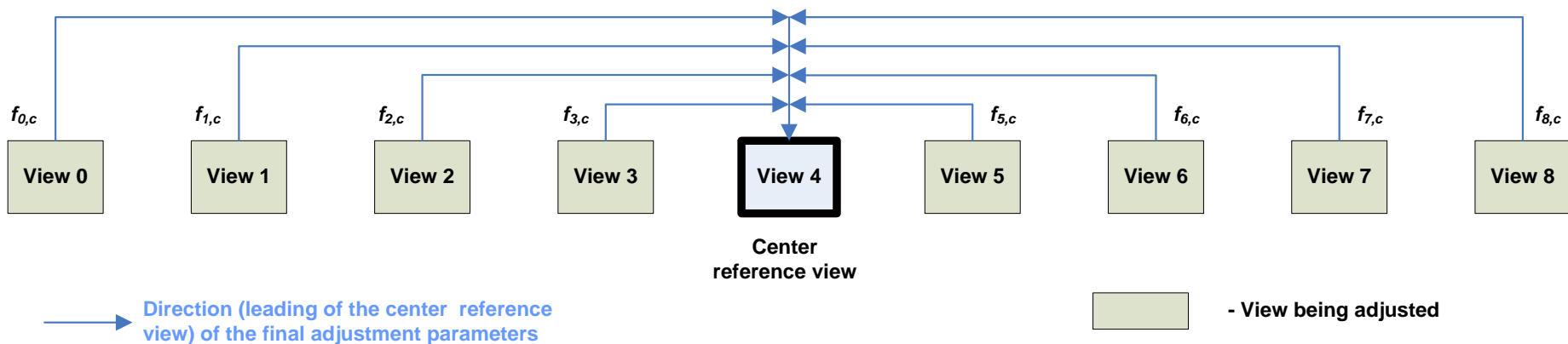
- Histograms between neighboring views are compared
 - influence of differences in viewing areas
- Adjustment parameters are calculated





Final calibration parameters

- Final calibration parameters to Center reference view are calculated
- Each color component is corrected independently





Delivery of material

- **<ftp://ftp.multimedia.edu.pl/3DV>**



Thank you for your attention

- Questions?