

FACADE CLASSIFICATION FOR DETECTION OF BUILDING DAMAGES

M. Kauffmann

Institute for Photogrammetry and Remote Sensing, Karlsruhe (kauffmann@natkat.org)

For rescue management after natural disasters, information about severe building damages is important for two purposes: to know where help is needed, and to find out how rescue forces can get there. The building damages could be detected automatically by means of image analysis. As final goal, the information could directly flow to a GIS-based disaster management system.

An approach of object-oriented multispectral segmentation, based on previous explicit knowledge, is used to classify facade elements, like windows, walls, visible storey borders etc. Between the found elements, represented by their central point or line, geometric relations can be examined. The results can be used for several purposes:

Assuming that an intact facade has some geometrical properties like flatness and rectangularity, one single oblique image can already be rectified, and scattered deviations from the constraints can be determined.

With a couple of images, the elements found in each of them can be matched to give identical points for a general three-dimensional reconstruction of the scene. Using such coarse object structures promises to be more robust in finding suitable initial values than using image edges and corners, which may be used to refine the first result.

Furthermore, if applied to endangered areas, some parameters can be derived that are of interest for robustness assessment, like relative window size and distance.