# Realistic Building Modeling from Sequences of Digital Images

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## Abstract

With the wide usage of LiDAR data and high-resolution satellite image, 3D modeling of buildings in urban areas has become an important research topic in the photogrammetry and computer vision field for many years. However the previous modeling has its limitations of merely texturing the image to the DSM surface of the study area and does not represent the relief of building surfaces.

This study is focused on presenting a system of realistic 3D building modeling from consecutive stereo image sequences using digital camera. Generally when acquiring images through camera, various parameters such as zooming, focus, and attitude are necessary to extract accurate results, which in certain cases, some parameters have to be rectified. It is, however, not always possible or practical to precisely estimate or rectify the information of camera positions or attitudes.

In this research, we constructed the collinearity condition of stereo images through extracting the distinctive points from stereo image sequence. In addition, we executed image matching with Graph Cut method, which has a very high accuracy. This system successfully performed the realistic modeling of building with a good visual quality. From the study, we concluded that 3D building modeling of city area could be acquired more realistically.

**Keyword**: Image Matching, 3D Building Modeling, Texturing