Abstract

The creation of digital three dimensional (3D) spatial models for the real scenes using image collections is one of the interesting applications of computer vision. In this paper we present some experimental results for creating textured 3D models from image collections using open source software packages (i.e. VisualSFM, CMVS, SURE, MeshLab, Cloud Compare). The images can be picked up with different types of cameras, or using the different imaging systems like UAVs and Satellites. At first, we use VisualSFM which is a robust Structure from Motion software estimating the calibration parameters of all the images, and a sparse 3D point cloud. We present two alternative softwares for multi view dense stereo reconstruction (CMVS and SURE). CMVS and SURE are effective tools and can operate on the common desktop PCs. The obtained results with CMVS and SURE are visualized with Meshlab and Cloud Compare respectively. Again we used MeshLab for mesh generation and texture mapping based on Poisson’s filter for surface reconstruction and texturing tools available in Meshlab.

References


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Index Terms
Creating Textured 3D Models from Image Collections using Open Source Software

Computer Science  

Image Processing

Keywords

3D Reconstruction, Structure From Motion, Multiple View Dense Stereo Reconstruction Mesh Generation, Texture Mapping, VisualSFM, CMVS, SURE, MeshLab, Cloud Compare.