Abstract

Scene analysis is a prior stage in many computer vision and robotics applications. Thanks to recent depth camera, we propose a fast plane segmentation approach for obstacle detection in indoor environments. The proposed method Fast RANdom Sample Consensus (FRANSAC) involves three steps: data input, data preprocessing and 3D RANSAC. Firstly, range data, obtained from 3D camera, is converted into 3D point clouds. Next, a preprocessing stage is introduced where a pass through and voxel grid filters are applied. Finally, planes are estimated using a modified 3D RANSAC. The experimental results demonstrate that our approach can segment planes and detect obstacles about 7 times faster than the standard RANSAC without losing the discriminative power.


Index Terms

Computer Science          Artificial Intelligence

Keywords

RANSAC, point cloud, plane segmentation, Kinect, RGB-D, Voxel