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AN EXPERIMENTAL STUDY ON REGISTRATION THREE-DIMENSIONAL RANGE IMAGES USING RANGE AND INTENSITY DATA

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Abstract. Laser scanner is noncontact instrument to measurement of spatial data. It measures object surfaces as point series and visualize as point cloud. One of the important steps on processes of laser scanning data is the registration of point clouds relation to common coordinate system. Many interactive and automatic methods have been developed for point cloud registration so far. The automatic methods are applied with range data of laser scanner or image data of sensor combination camera. The registration by range data is mostly depend object geometry. If scan surface is deprived from geometrical details, conjugate points can not be found to compute registration parameters between point clouds. In that case, intensity data of laser points can be used for registration. In this study, intensity image was created from laser scanner data and the registration parameters were computed with keypoints extracted by SIFT method from these images. The results were also compared with the iterative closest point (ICP) method.

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