Lunch Seminar, Geoscience and Remote Sensing (GRS):

Non-Rigid registration of Mobile Mapping Point Clouds
&
Solving the Next-Best-View problem for scanning complex piping systems

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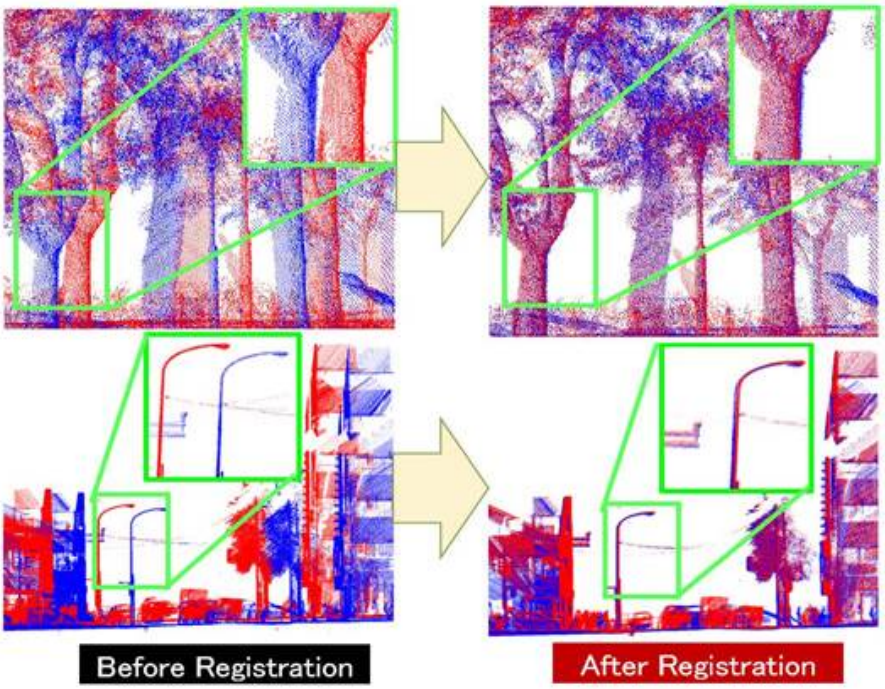
Thursday, October 16, 12.40-13.30, CITG, Room 2.02



Abstract

1) Non-rigid registration of laser-scanned point clouds from MMS

When the same area is scanned repeatedly by a Mobile Mapping System (MMS), the resulting point clouds often have differences in the order of hundreds of millimeters caused by inertial drift of the IMU and GPS signal. In this project, we propose an automatic accurate registration method for MMS point clouds and linear trajectory modification using a new variant of the ICP (Iterative Closest Point) algorithm. The method on average reduces the differences to less than 50mm at roads and building facades.

2) *Solving the Next-Best-View problem for scanning complex piping systems*

Terrestrial laser scanners are often used as measurement tool for as-built modelling of industrial plants. The tangled structure of the piping systems results in complex occluded areas which must be captured from different scanner positions. We developed a computer-aided method for optimizing the sequential acquisition of scans sampling a complex piping system. Different from the conventional approaches, in the proposed method, pipes are recognized after every scan, local occluded spaces occupied by yet unseen pipes are estimated, and the best scanner position is found that locally reduces these occluded space in a next acquisition. Simulation results show that our method outperforms a conventional approach both in recognition accuracy, efficiency and computational efforts.