**The research on accuracy improvement method for point clouds registration**

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**Abstract:** Terrestrial LiDAR is one of the time-and-labor saving equipments which can be used for acquiring three dimensional geospatial data at high precision to apply for construction, plant, cultural heritage protection. In recently, the researches on Terrestrial LiDAR are actively carrying out. However, the research on registration of point clouds seems to be weak. In this study, we are going to propose the method in which multi-location point clouds are merged for ensuring the accuracy degree of the registration. Mostly, the step can be decided as two main part — Optimum registration method and Spatial feature considered method. In the first step, optimum registration method, the data would be registered successively in different way for accuracy analysis and determination of optimum method. In the second step, spatial feature considered method, the data for registration are acquired in the regional level, and the data would be merged into one global data. In this step, the registration error can’t be ignored. Therefore, the common points for registration at each point clouds are determined by reference point surveying. From the result of the reference point surveying, the error occurred in the registration can be minimized by adjusting the error at the regional level. The method proposed in this paper has been applied in point clouds data, and also expect to apply in the spatial data construction and generation in the near future.

**Keywords:** Terrestrial LiDAR, Point clouds, Registration, Merge, Reference point surveying