

Virtual Campus Reconstruction Using Integrated Datasets of Airborne LiDAR, Ground-Based LiDAR, Large-Scale Topographic Maps, and Airborne Images

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ABSTRACT

Modeling 3D landscape has recently drawn many attentions in various applications. Reconstruction of virtual campus is commonly needed for the administration offices of universities. Due to the complexity of urban landscape, single data source is frequently inadequate for realistic 3D landscape modeling. This paper proposes a scheme of landscape reconstruction by the integration of multi-source datasets. For data integration, unifying the coordinate systems of the datasets is a top priority. It is suggested the use of a mapping coordinate systems as a datum to unify the coordinate systems of various datasets. The terrain, buildings and other objects are three major components to form an urban landscape model. This paper developed practical and efficient methods by taking the advantages of various data sources to reconstruct object models with respect to the components. The virtual model of NCKU main campus was reconstructed as an example to demonstrate the feasibility of the proposed method. The issues of needed manpower and modeling quality were discussed as well.