

# Virtual Reality Learning System for Digital Terrain Model Surveying Practice

李振民, 葉怡成, 陳世峰, 江宗原, 連立川

Information Management

Computer Science and Informatics

icyeh@chu.edu.tw

## Abstract

This research builds a virtual reality learning system for digital terrain model (DTM) surveying practice based on the triangular irregular network (TIN). The proposed system offers students an interactive, individual, three-dimensional, measurable, immediate feedback learning process. The system operating procedure is divided into five operations: (1) selecting topographical control points (2) TIN editing (3) evaluating errors (4) analyzing errors (5) demonstrating performance. Students are able to carry out selecting the topographical control points and editing TIN under the VR environment as if they implemented these surveying operations in the field. In addition, the magnitude and distribution of elevation errors can be recognized immediately after these operations are completed. Therefore, students have immediate feedback. After using the system in real practice courses, significant effects were found between the experimental set and contrast set.

Keyword: digital terrain model, surveying practice, virtual reality, computer-aided learning.