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## Design and Implementation of Debris Flow Alluvial Fan Reconstruction System

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**Abstract:** According to principles of structure light 3D vision, debris flow alluvial fan reconstruction system is designed and implemented by using OpenCV and OpenGL under VC++. System consists of camera calibration, structure light calibration, the center of structure light stripe extraction and 3D display modules. The system's overall structure and implementation process of each module is explicated. The output of each module is gained and the effectiveness of system is verified through reconstruction experiment. The system can reconstruct the debris-flow alluvial fan rapidly without contact, and overcome many shortcomings of traditional measurement methods. It runs quickly and is convenient to use.

**Key words:** debris flow; alluvial fan; structure light; 3D reconstruction; computer vision

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