

## ABSTRACT

### LIDAR STRIP ADJUSTMENT WITH TIN MATCHING

Light Detection And Ranging (LIDAR) provides a dense sampling and cost effective tool for the acquisition of discrete elevation data. The dataset is not error-free and often requires some adjustment procedure to reduce or remove the effects of any unmodeled systematic errors. Many approaches organize the data into a Triangular Irregular Network (TIN) structure and perform linear interpolation of the triangular faces to extract surface information for the adjustment.

This paper proposes an alternative approach to the interpolation procedure when the dataset represents the Earth's terrain and involves the use of the Thin Plate Spline (TPS) function. Experiments with synthetic data showed that the proposed approach outperformed the planar interpolation approach by about 35% in cross validation and validation tests and by about 30% in 3D translation and 3D similarity strip adjustment procedures.

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