Automating Data Accuracy from Multiple Collects

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SUMMARY

When surveyors perform a 3D survey over multiple days, minor changes in GPS conditions can misalign the data between the collects. Realigning the data usually requires hours of labor from an experienced post-processor, often using multiple software programs. Although surveyors prefer to avoid these misalignments by performing all collections in a single day, weather, breakdowns and large survey areas often make this impractical. Now new data processing techniques and workflows are available to simplify and automate the alignment of overlapping datasets. These techniques exploit planar features and their unique spatial relationships to each other. By extracting the common planar features found within multiple datasets, they can be matched with a high degree of confidence. To take advantage of these techniques, the processor must identify the existing spatial relationship between the planes to maximize the number of common areas available for use, and automatically extract those meeting the requirements of the process. The algorithms automatically determine the optimal boresight and calibration values, using common features identified in the data. Identified features are converted to shape files to allow the software to produce a robust, repeatable, and calculated output, while improving the expediency of the process over traditional lidar processing techniques. As a case study, this presentation describes a mobile lidar survey performed around Kelowna and Vernon, Canada in May 2013 for the British Columbia Ministry of Transportation, where bad weather had forced the operator to spread the survey over three days. Varying GPS conditions over these 48 hours misaligned the datasets, but the processor aligned them quickly and automatically by identifying several shared planar features in the overlapping areas.