3DM CalibCam

Focussing on the Future

Mining Analysis Software

3DM CalibCam is ADAM Technology's newest addition to the 3DM software range. Designed to complement 3DM Analyst, 3DM CalibCam adds the ability to use any number of images to perform the following tasks:

- Camera calibration
- Exterior orientation determination
- Point surveying

3DM CalibCam uses a *least squares bundle block adjustment* algorithm optimised for terrestrial applications and offering advanced functionality for interior and exterior orientations, using any combination of control points, camera stations, and natural tie points to enhance orientations.
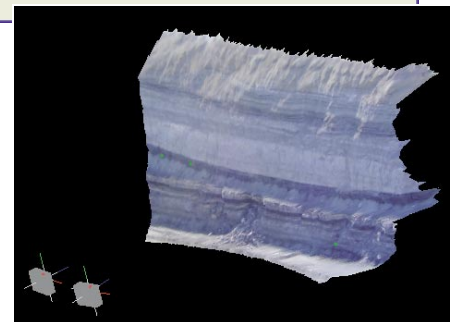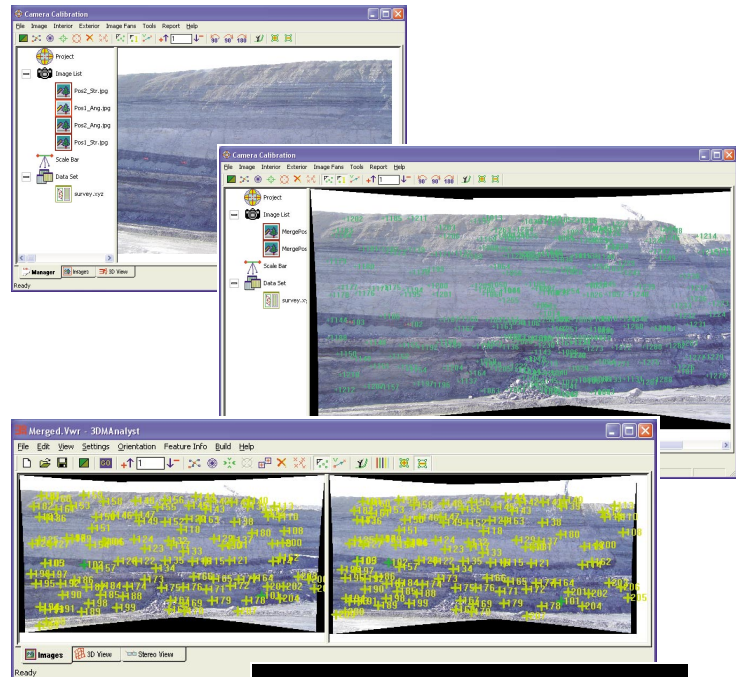
Minimising Control

One of the key advantages of using 3DM CalibCam with 3DM Analyst is that it dramatically reduces the amount of control required for accurate orientations using the same techniques that have been used successfully for years by the mapping industry with aerial photographs.

3DM CalibCam applies these techniques to the much more challenging terrestrial applications allowing enormous flexibility in the number and placement of control points for orientations.

The key to the operation of 3DM CalibCam is to overlap adjacent images so that control information can be successfully passed between models. This allows dangerous or inaccessible areas to be accurately mapped by placing control in nearby areas and bridging the gap using additional images; even an entire pit wall can be mapped with just a single control point!

3DM CalibCam supports many methods of operation, mixed and matched in a single project if desired. *Image strips* consist of a series of images with 60% overlap and are ideal for detailed mapping from short distances, while *image fans* are built from a series of images taken from the same position and are ideal for detailed mapping from long distances (e.g. across the other side of the pit) with zoom lenses.

3DM CalibCam can also merge images taken with low resolution cameras with subpixel accuracy, removing lens distortions and balancing colour as it does so. This allows even inexpensive cameras to be used to easily generate 20+ megapixel images without sacrificing accuracy!

Features

- Supports digital cameras and scanned images in a variety of image formats: BMP, PNG, TIFF, and JPG.
- Built-in support for calibrating digital cameras both with circular targets in a target range and with natural points.
- Optional Least-Squares Matching for all digitised data to improve accuracy.
- Optional centroiding of circular targets to improve accuracy.
- Automatic feature detection for relative only points.
- Image merging for images taken from a single camera station.
- Customised orientation routines especially designed for difficult terrestrial models.
- Complete interoperability with 3DM Analyst.

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Technical Specifications

Photography

Any digital camera can be used, from a simple hand-held, low-resolution camera, to the most sophisticated available on the market. Scanned images from calibrated film cameras can also be used. 3DM CalibCam can calibrate digital cameras directly, or import standard camera and lens calibration details for film cameras.

Data Exports

Derived 3D point data can be exported in an ASCII XYZ format; camera calibrations and exterior orientations are exported in 3DM Analyst's .cal and .ori formats.

Training

ADAM Technology can provide operator training if required. Effective operator training can be achieved in a very short time. No previous training or special photogrammetric knowledge is required for normal operation. All complicated mathematical processes are performed automatically by the software, requiring only simple selections and inputs from the operator.
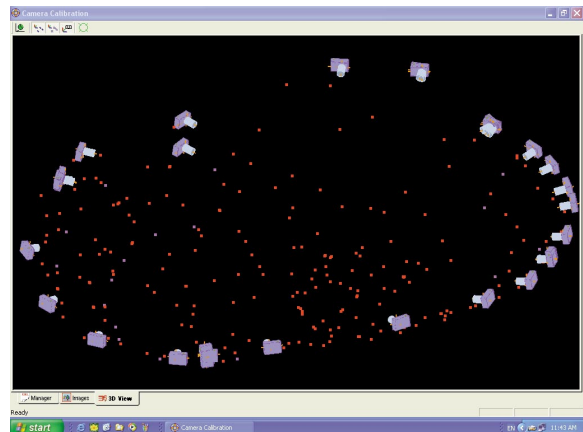
Computer Requirements

Hardware

The minimum specifications for using digital camera imagery are 256MB of RAM and a Pentium III or better. For using scanned images from film cameras, we recommend 512MB of RAM and an Intel Pentium IV/AMD Athlon or better.

OS

Microsoft Windows NT 4.0 Service Pack 6a or better, Microsoft Windows 2000, or Microsoft Windows XP.

Display

A hardware-accelerated OpenGL graphics card is recommended.

ADAM TECHNOLOGY

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