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Rectify Extreme Tool

Example exercises

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Practical exercise for the implementation of the Rectify Extreme software in Coastal Video-monitoring

Exercise 1 - Objective: Rectification of a TIMEX image of "praia do Norte" beach (Nazaré – Portugal).

1. Run the software Rectify Extreme.

2. Open the time average image (TIMEX) taken at August 11, 2010 from 12h00 to 12h10 (TX1200-601.tif). At that time tide was approximately at mean sea level (i.e. z = 0) **[File ->Open].**

3. Define camera internal parameters (in the cameras.xml file chose the MOBOTIX with the IP 10.4.225.136 (R) – recognize the defined parameters)**[Camera ->Internal Parameters].**

4. Correct the image (use default values) **[Tools -> Correct Images].**

5. Compute camera orientation **[Camera -> Orientation]**:

   a. In the Control Points tab choose the file GCP.XML (see exercise 2).

   b. View the Ground Control Points file (the error column should be empty).

   c. Define an initial estimate for the camera position (e.g. XL, YL, ZL = 0,0,0).

   d. Click the Advanced tab and look at the parameters.

   e. Compute camera orientation (verify that in the status bar the Mobotix Camera is now oriented).

6. Rectify the image: use Z = 0 (MSL), a pixel size of 0.5 m and a target area with xmin, xmax, ymin, ymax = 118000, 118470, 293400, 294800.

Exercise 2 - Objective: Control Points file definition.

1. Open all the images acquired during the survey of Ground Control Points (GCP) used for camera orientation made on the October 8, 2010 (files GPC1, 2, 3, 4, 7 and 8).

2. Correct the images using the same internal parameters used in previous exercise.

3. Open the Camera orientation menu **[Camera -> Orientation]**, in the Control Points tab select the option from image and click on Create.

   a. Open the image GPC1.jpgc (undistorted image).

   b. In the image search for the people that was making the survey and zoom the image (the zoom level should be at least 100% - during this process explore the zoom tools).

   c. With the add points tool activated ( ) pick the foot of the left surveyor (in the bottom table the image coordinates (ImageX, ImageY) should be automatically filled).

   d. Using the collected survey data (file GPC_topografia.xls), fill the other fields (ID and x,y coordinates).

   e. Repeat for the other five GCP images by opening successive images without exiting the menu.

4. Save the GCP file and exit the Georref tool.

5. View the GCP.

6. Compute the external orientation; verify the error.

Files/Folders provided

The Rectify Extreme tool is freely available at http://cosmos.fc.ul.pt/index.html.

The data needed for the present exercise is available in the Exercise.rar.

The Exercise folder includes an example Timex image (TX1200-601.tif), a file with the intrinsic camera parameters for several cameras calibrated in laboratory (Cameras.xml), a file with a table that linkage the GCP in field and image coordinates (GCP.xml) and two other folders (ExtParDefinition and Solutions). Within the ExtParDefinition folder you can find the images to the definition of the Control point file (for exercise 2) and the Solutions folder includes the solutions for both exercises.

Authors and contacts

This Software was developed by Ana Silva and Rui Taborda from the Geology Department of Lisbon Science Faculty in the scope of a master thesis, more details on this procedure can be found in the following reference and website:

- **Silva AN, Taborda R, Catalão J and Freire, P (2009). DTM Extraction Using Video-monitoring Techniques: Application to a Fetch limited Beach. JOURNAL OF COASTAL RESEARCH, Volume: 1, Special Issue: Sp. Iss. 56, Pages: 203-207, Published: 2009**

- **http://cosmos.fc.ul.pt/index.html**

Any questions about the present tool please contact us:

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