

Chapter 2

Included Software and Data

2.1 Hardware Requirements, Operating System

If you want to use the software available from the Springer server and work with the example data or even use your own materials, it is necessary to have an adequate PC supplied with sufficient main memory (RAM), storage capacity (hard disk) and high resolution graphics. In particular, you need:

	Minimum	Recommended
Main memory (RAM)	1 GB	4 GB
Hard disk	10 GB	>> 50 GB
Graphics resolution	1024 x 768 pixels	1280 x 1024 pixels
Screen size	17"	21"
Mouse	3 buttons	central wheel

Furthermore, to handle (aerial) photos on paper or film material, you need a scanner (see Chap. 3). For stereoscopic viewing you need red-cyan glasses, a simple example is included in this book. You need a mouse with 3 buttons or with a central wheel which, when pressed down, also serves as middle mouse button.

For an ergonomic work you should use a “real” PC (not a tablet) with high-resolution graphics and a large screen, a keyboard and a mouse.

The software requires a MS Windows operating system, version 7 or higher (in 32- or 64-bits mode).

2.2 Image Material

In the first tutorials we will process aerial photos which were taken by an analogue aerial camera (see Sect. 1.3) in the usual format of 23 by 23 cm (9 by 9") and then converted into a digital format using a scanner. Nevertheless, also images from non-metric, réseau or digital cameras, and not only aerial but also terrestrial photos can be handled.

From a practical point of view, for the following tutorials all image material is prepared on the Springer server. To help you handle your own examples, Chap. 3 will discuss the basic principles of scanning paper or film photos. Beside this, you may of course use images taken with a digital camera.

The aerial photos used in Chaps. 4 and 5 are owned by the Corporación Auto-noma del Valle del Cauca (CVC), Cali, Colombia. Thanks to Ing. Carlos Duque from the CVC who managed everything to give me the rights using these photos here.

The photos used in the Chaps. 6 and 7 are owned by the Institute of Photogrammetry and GeoInformation (IPI) of the University of Hannover, Germany. Thanks to Dr.-Ing. Folke Santel for her patience and help.

Section 9.1 deals with high resolution satellite images. For our tutorial we will use images from the Cartosat-1 satellite, showing an area south-west of Warszawa, Poland. Thanks to the Space Application Centre ISRO, Ahmedabad, India, and to GEOSYSTEMS Polska, Warszawa, for the courtesy to use the data (images and control points) in this book!

2.3 Overview of the Software

On the Springer server (extras.springer.com) you find a small but really useful digital photogrammetric software package with which you can make everything described in the following chapters and much more. In particular, the software is *not* limited to the example data but can be used for a wide range of photogrammetric tasks. The package is divided into four parts:

LISA BASIC: A raster GIS software with a lot of possibilities in image processing, terrain modelling and more. Copyright by the author.

LISA FOTO: Extension of LISA BASIC, digital photogrammetric workstation. This is the main software used in the following chapters. Copyright by the author.

LISA FFSAT: Digital photogrammetry for stereo satellite data. Developed by the author in cooperation with Dr.-Ing. Karsten Jacobsen, University of Hannover.

Please note: The LISA programmes delivered with this book are special versions with slightly reduced functionality and the maximum size per image is limited to 20 MB. A complete programme description will be copied onto your PC during the installation (see `c:\program files (\x86)\lisa\text\lisa.pdf`).

BLUH: A professional bundle block adjustment software optimised for aerial triangulation. A “light” version including the central five modules of this programme system with reduced functionality and limited to a maximum of 30 images per block will be installed on your computer. Copyright by Dr.-Ing. Karsten Jacobsen from the Institute of Photogrammetry and GeoInformation, University of Hannover, Germany.

2.4 Installation

Important: Log into the operating system with full rights, usually select user = administrator. Copy the software from the Springer server to your PC and start the SETUP programme. You can select whether you like to create entries in the start menu and/or desktop icons. *For consistency with the example data it is urgently recommended to use the proposed program directory (installation path)!* Finally copy the data sets used in the following tutorials to your PC: Data of tutorial 1 to c:\program files (x86)\lisa\tutorial_1 and so on.

After the installation has finished, you will find the following additional directories on your PC:

c:\program files (x86)\lisa	LISA and BLUH programme files, fonts, runtime libraries etc.
c:\program files (x86)\lisa\text	the manual, PDF format
c:\users\public\lisa\pal	directory for palettes
c:\users\public\lisa\sig	directory for area symbols
c:\users\public\lisa\flt	directory for filter matrices
c:\users\public\lisa\cam	directory for cameras
c:\program files (x86)\lisa\tutorial_1	data prepared for tutorial 1
...	...
c:\program files (x86)\lisa\tutorial_5	data prepared for tutorial 5

Note: If your graphics has the required resolution (minimum 1024×768 pixels, 24-bits colour depth) but the error message “Screen resolution too small” appears, try the following: Click onto a LISA icon (for instance in the Start menu) with the right mouse button, then go to **Properties**, select the tab **Compatibility** and activate **Disable display scaling on high DPI settings** in the **Settings** section.

2.5 General Remarks

During the standard installation process, you have only those data files copied onto your hard disk which are used as input files in the following tutorials (see Sect. 2.4). Besides, many of the intermediate and final results are also prepared on the Springer server (sub directory data\tutorial_x\output) and can be used for control purposes or, if you would like to skip some steps and go on later, to get intermediate results necessary for the following steps. Therefore, at the end of any tutorial chapter all created files are listed.

For consistency it is recommended to use the file names proposed in the tutorials. In general, it is of course possible to choose any output name.

To make the work a bit clearer in the following tutorials, special fonts are used:

- **Options and parameters:** For instance, Image No. refers to the corresponding text in an input window.
- **Menu entries:** Separated by ">", for example: Processing > Stereo measurement means that you first have to click onto Processing, then onto Stereo measurement.
- *Definitions* or *key words* are printed in italics.
- Any results stored in a file and listed here for control purposes are printed in this font.
- File names are always printed in UPPERCASE letters.
- Units are printed in [square brackets], example: [μm].
- Vectors are also printed in square brackets with an arrow showing the direction like [start point \rightarrow ending point].

See also Sect. 10.4 for some remarks about the programme handling.

Digital Photogrammetry

A Practical Course

Linder, W.

2016, XXIII, 209 p. 76 illus. With 3-D glasses. With online files/update., Hardcover

ISBN: 978-3-662-50462-8