pix’r’us Photogrammetry Suite

User Manual

Contents

1. Introduction

1.1. What is PPS?

PPS is a powerful photogrammetry software written in C++ by pix'r'us .

1.2. What this document covers

This document is intended to give the user basic information on how to use PPS and make him/her familiar with the software. This document covers the explanation of the user interface, toolbar details and basic workflow.

2. Installation

2.1. Dependencies:

- wxWidgets: wxWidgets V2.8.0 or later
- GDAL: GDAL V1.4.0 or later
- OpenCV
- OpenGL: Opengl V1.2 or later (with VBO extension)

2.2. Installation

1. Extract the tarball.
2. Change the current directory to the root of the extracted folder.
3. Use ./make command from shell.
4. PPS will be installed to the current directory.

3. User Interface

3.1. Overview

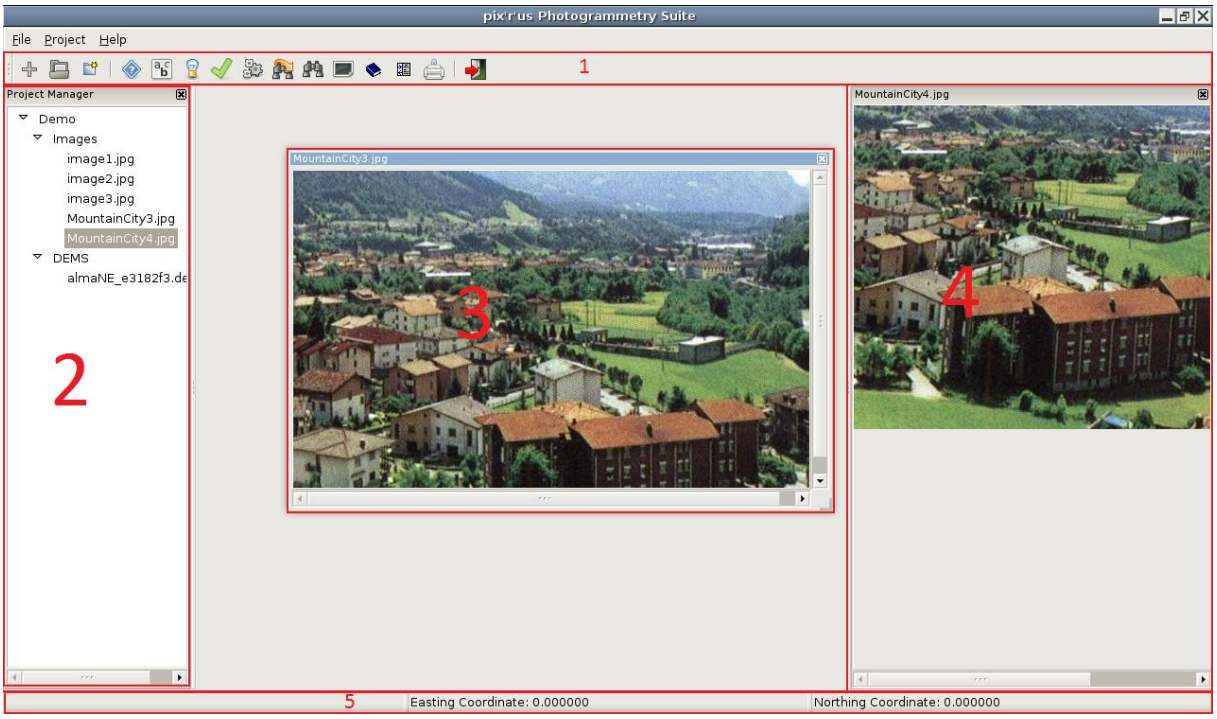


Figure 1 Screenshot of the GUI

The above image shows the layout of the user interface and the items numbered from 1 to 5 are explained below.

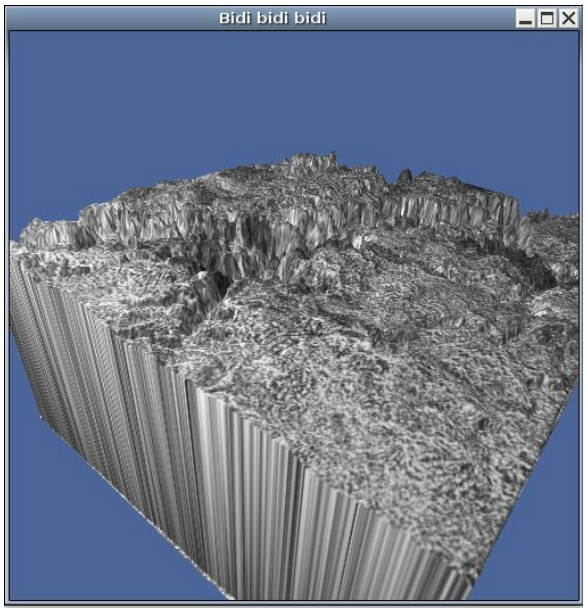
1 – The Main Toolbar

2 – The Project Manager Panel

3 – A Floating Panel

4 – A Docked Panel

5 – Status Bar



Another panel shown to the left is the DEM Panel.

3.2. Details

3.2.1. Main Toolbar

This toolbar contains buttons for nearly all the functionalities of PPS for quick access. Each button is explained below:

1. Show DEM: Shows the selected DEM file in a separate DEM Panel.
2. Open Image: Opens an image file and adds it to the project.
3. Open DEM: Opens a DEM file and adds it to the project.
4. Find Corners: Find the features of the selected image.
5. Select Corners: Opens a corner selection dialog which is used to select corresponding corners of two images.
6. Register Two images: Calculates the transformation matrix between two images.
7. Create Mosaic: Combine two registered images to produce a single output.

8. Open Image Editor: Shows the image editor dialog which is used to enhance images.

9. Create Orthorectification: Remove distortion caused by perspective from the image by using camera parameters.

10. Show Orthorectification: Show the orthorectified version of the image.

11. Create Mosaic From Ortho: Combine multiple images that have camera parameters into a single big image.

12. Create Anaglyph From Ortho: Create an anaglyph image from two images with camera parameters that can be viewed 3D using red-green 3D goggles.

13. Create Mosaic Using Worldfile: Combine multiple images that have Worldfile info to create a single big image.

14. Create Anaglyph Using Worldfile: Create an anaglyph image from two images with Worldfile info that can be viewed 3D.

15. Quit: Shut down PPS.

3.2.2. Project Manager Panel

This panel shows information about the currently open project. The tree structure represents the data contained in the project. The root shows the name of the project. The tree can be expanded and collapsed as needed.

This panel also has a context menu that can be used to accomplish certain tasks:

1. Show Image: Shows the selected image.

2. Enhance Image: Opens the Image Editor Dialog.

3. Camera Parameters: Opens a dialog that is used to adjust camera parameters or load them from a file.

4. Load Worldfile: Opens a dialog for the user to choose a Worldfile, and assigns the data to the selected image.

5. Save Worldfile: Saves Worldfile data of the image to a specific file.

6. Assign DEM: Opens a user-chosen DEM file and assigns the data to the selected image for use in Orthorectification.

3.2.3. Floating Panel

The GUI of PPS is designed to be flexible. Therefore nearly all panels are dockable. An example floating panel is this.

3.2.4. Docked Panel

This is an example docked panel.

3.2.5. StatusBar

The statusbar consists of three fields. First field is used to display tooltips. The second and third fields are used to display coordinate info of the pixel under the mouse (if the image is registered to the world coordinate system).

3.2.6. Dem Panel

This panel is used to display 3D Digital Elevation Model data.

3.2.7. Main Menu

a) File

   i) Open Image : Opens an image file and adds to the project.

   ii) Exit: Quits PPS.

b) Project

   i) Create New Project: Creates an empty project.

ii) Open Existing Project: Opens an existing project from the filesystem.

iii) Save The Current Project: Saves the current project to the filesystem.

iv) Close The Current Project: Closes the current project.

c) About: Shows the About dialog.

4. How To Use PPS

In order to use the features of PPS the user has to create a project. Without a project, all features are disabled.

When a project exists, the user has to add images or DEMs to the project in order to use them.

Certain tasks require other tasks to be completed first. If a required task is not done beforehand, PPS will show a warning message showing what has to be done.

4.1. Example workflows

4.1.1. Creating a Mosaic

1. Open PPS.
2. Create a project.
3. Add the required images to the project using the menubar or toolbar.
4. Find corners of the images (toolbar button #4).
5. Register the images (toolbar button #6).
6. Create Mosaic (toolbar button #7).

The result will be automatically added to the project.

4.1.2. Creating an Orthorectified Mosaic

1. Open PPS.
2. Create a Project.
3. Add the required images to the project using the menubar or toolbar.
4. Select an image and edit or load camera parameters by using the right click menu of the name of the image in project panel.
5. Repeat 4 for all images.
6. Select all images from the project panel using ctrl.
7. Create Orthorectification of images (toolbar button #9).
8. Create Mosaic from orthorectified images (toolbar button #11).

Resulting image will be automatically added to the project.

4.1.3. Showing a DEM File

1. Open PPS.
2. Create a Project.
3. Add the required DEM file to the project (toolbar button #3).
4. Double clicking the DEM file in the project manager panel shows the DEM as 2D image.
5. Selecting the DEM in the project manager panel and clicking toolbar button #1 shows the 3D DEM Viewer dialog.