



ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

IMAGE AND VISUAL REPRESENTATION LABORATORY

Semester Project in Computer Science

Ground-Truthing Tool for Document Image Analysis USER MANUAL

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Introduction

The **GROUND TRUTHING** software has been developed in the frame of the EPFL project Ground Truthing Tool for Document Image Analysis. The project supervisor is Mr. Nikolaos Arvanitopoulos. The aim of the software is to introduce the possibility of graphically commenting a text previously scanned by the user. Since the format of the texts scanned are usually in TIF, the user can use any kind of image format (pdf, jpg, gif,...).

GROUND TRUTHING software has been developed using **Qt 5.5.0**. Qt is a cross-platform application framework that is widely used for developing application software. This can be run on various software and hardware platforms with little or no change in the underlying codebase, while still being a native application with the capabilities and speed thereof. Qt is currently being developed both by the Qt Company, a subsidiary of Digia, and the Qt Project under open-source governance, involving individual developers and firms working to advance Qt. Digia owns the Qt trademark and copyright. Qt is available with both commercial and open source [GPL](#) v3, [LGPL](#) v3 and LGPL v2 licenses. The **GROUND TRUTHING** software is developed under the non-commercial version of Qt.

Qt is used mainly for developing application software with graphical user interfaces (GUIs). Qt uses standard C++ with extensions including signals and slots that simplifies handling of events, and this helps in development of both GUI and server applications which receive their own set of event information and should process them accordingly. Qt supports many compilers, including the [GCC](#) C++ compiler and the Visual Studio suite.

Installing GROUND TRUTHING

Before running **GROUND TRUTHING**, the user has to install previously:

- **Qt 5.5.0** in his/her computer (Windows, Mac, Linux ...). The user will find the information regarding the installation of **Qt 5.5.0** on different platforms by following this link: <http://doc.qt.io/qt-5/gettingstarted.html>.

The user will install **GROUND TRUTHING** code contained in the USB key as follow:

- Code:
 - actionbutton.h/actionbuton.cpp
 - addiconpicture.h/ addiconpicture.cpp
 - createfileabstraction.h/ createfileabstraction.cpp
 - extractinformation.h/ extractinformation.cpp
 - fileabstraction.h/ fileabstraction.cpp
 - fileexistswindow.h/ fileexistswindow.cpp
 - filereader.h/ filereader.cpp
 - filewriter.h/ filewriter.cpp
 - image.h/image.cpp
 - imagegraphicsscene.h/imagegraphicsscene.cpp
 - imagegraphicsview/imagegraphicsview.cpp
 - imageviewer.h/imageviewer.cpp
 - rectangledraw.h/rectangledraw.cpp
 - rectanglewindow.h/rectanglewindow.cpp
 - removeconfirmationwindow.h/removeconfirmationwindow.cpp
 - saveractangle.h/saveractangle.cpp

Running GROUND TRUTHING

1. Once the user has launched **Qt 5.5.0** and has opened the project **GROUND TRUTHING**, he will be able to run it by pressing the **green triangle**  (see Fig1).

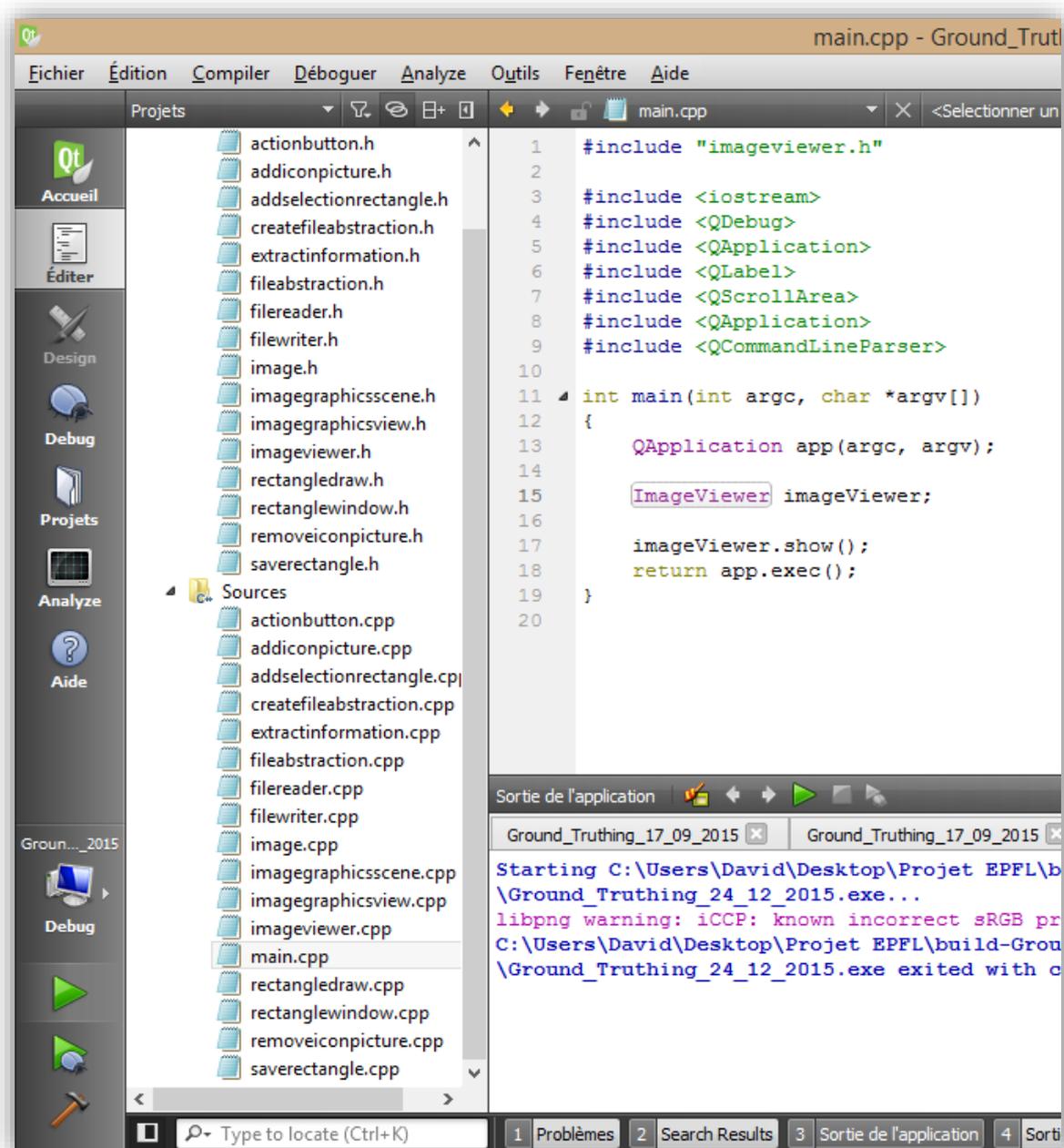


Fig. 1. Qt CREATOR environment containing GROUND TRUTHING. In the left menu in bright light, the user has the green triangle in order to run correctly the application.

2. By clicking on the green triangle, *Qt* is going to compile and launch GROUND TRUTHING. In Fig. 2, the user is able to see the application Main Window.

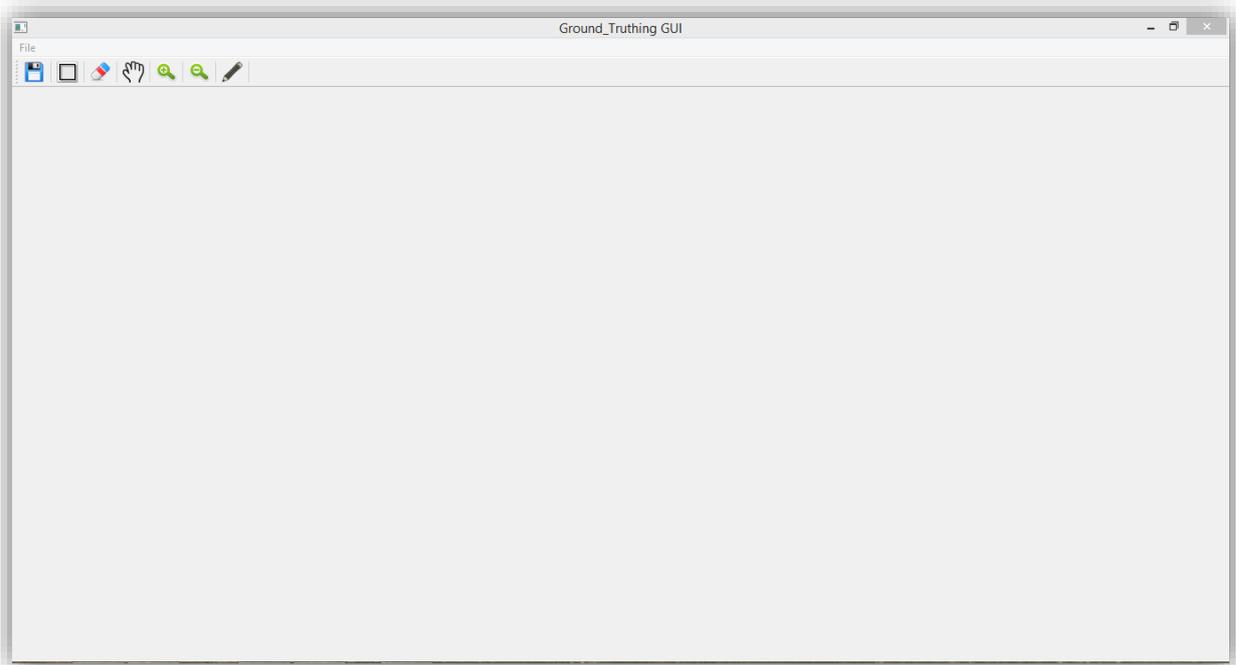


Fig. 2. GROUND TRUTHING Main Window. The application is running.

3. By clicking on the FILE menu (see Fig. 3), a File Dialog box appears on screen. It allows the user to select the file he wants to open (see Fig. 4).

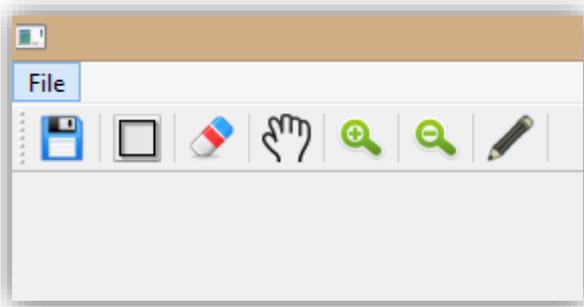


Fig. 3. Opening a scanned file (Step 1).

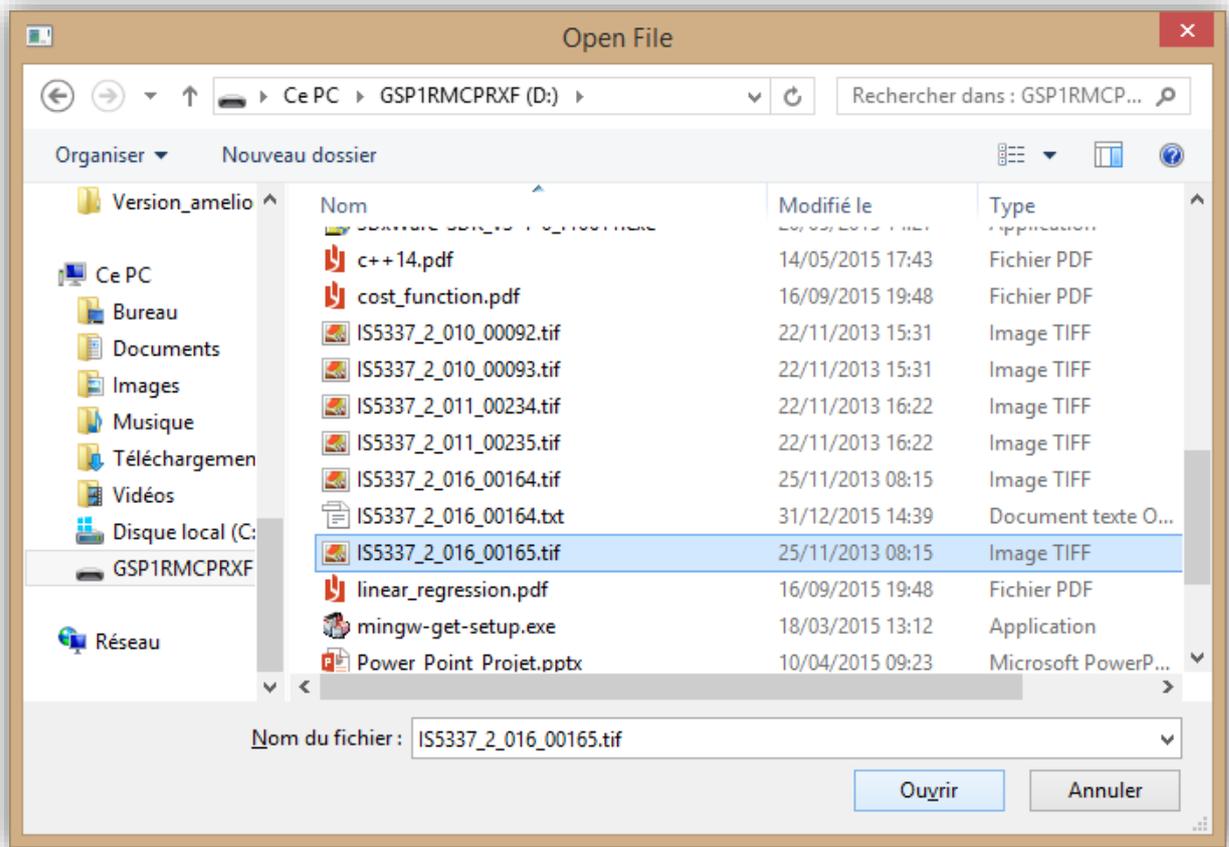


Fig. 4. Opening the scanned file (Step 2). Select a file containing the scanned file.

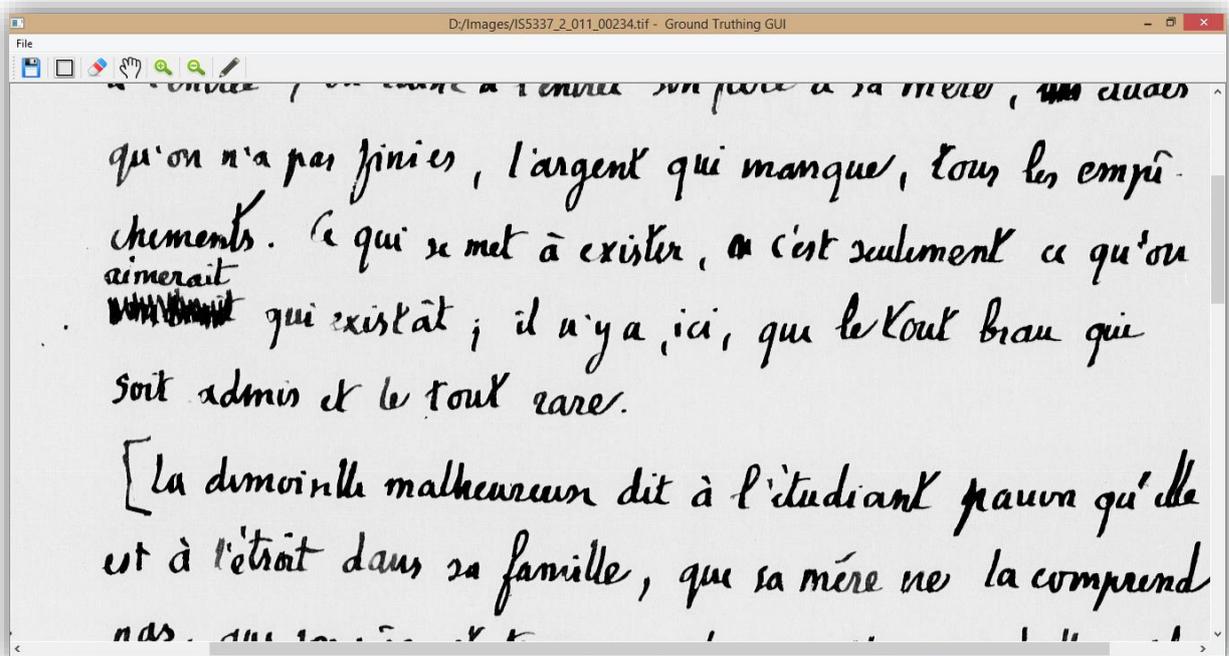


Fig. 5. Opening the scanned file (Step 3).

4. Clicking on will allow the user to draw a rectangle on the scanned text. He will click on the mouse left button, maintain it pressed and move the mouse pointer all around the scene in order to determine the rectangle size. (see Fig. 6).

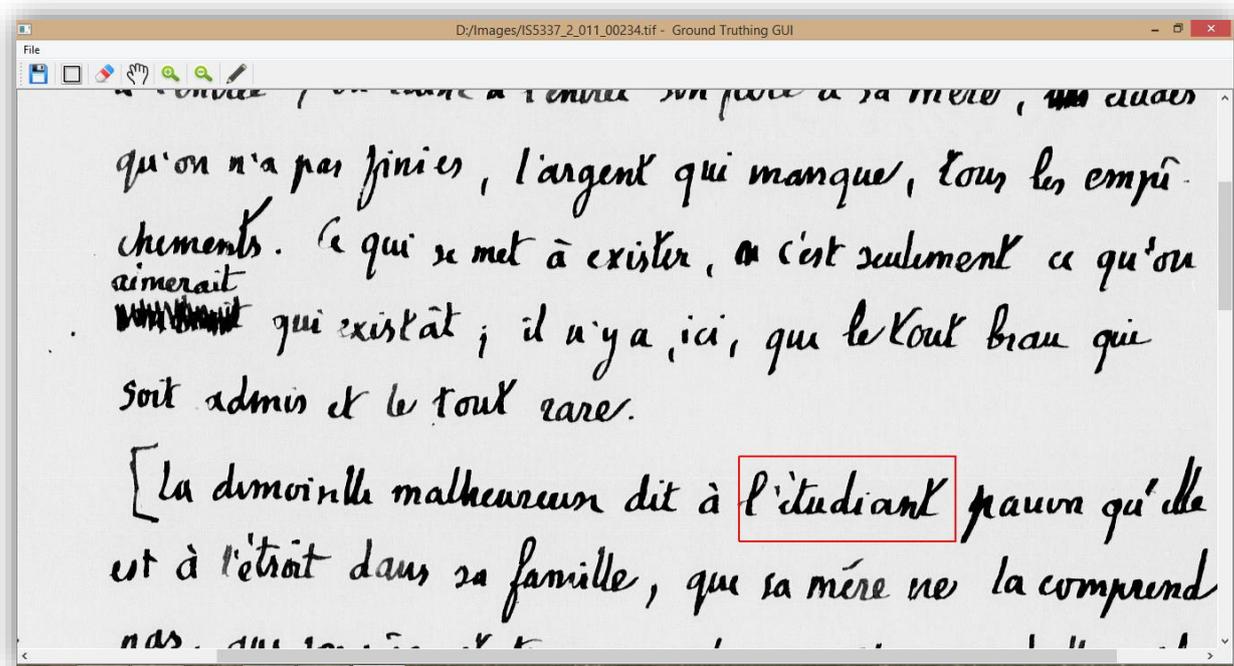


Fig. 6. Drawing on the scanned text (Step 1).

5. Double clicking on the rectangle will open a pop-up window (see Fig. 7). The user can fill the following fields:
 - a. Line Number: *The line position in the scanned text.*
 - b. Word Number: *The word position in the line.*
 - c. Comments: *The user can write a comment. It will be associated to the rectangle.*

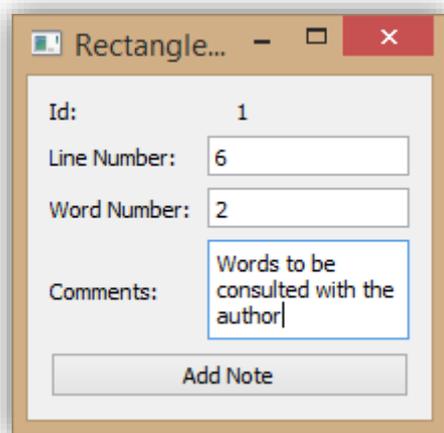


Fig. 7. Commenting the scanned text (Step 2). Pop-up containing the different fields that can be filled by the user.

- The user is able to save the comment by clicking on the “Add Note” button. Then, an icon will appear at the top-left corner of the rectangle (see Fig. 8).



Fig. 8. Commenting the scanned text (Step 3). Once the user has filled the different fields associated to the rectangle, the user can also save the comment by clicking on “Add Note”. A small icon appears in the upper left corner of the rectangle.

- The user can repeat Steps 5 and 6 as needed in order to add supplementary notes to the document (see Fig. 9).

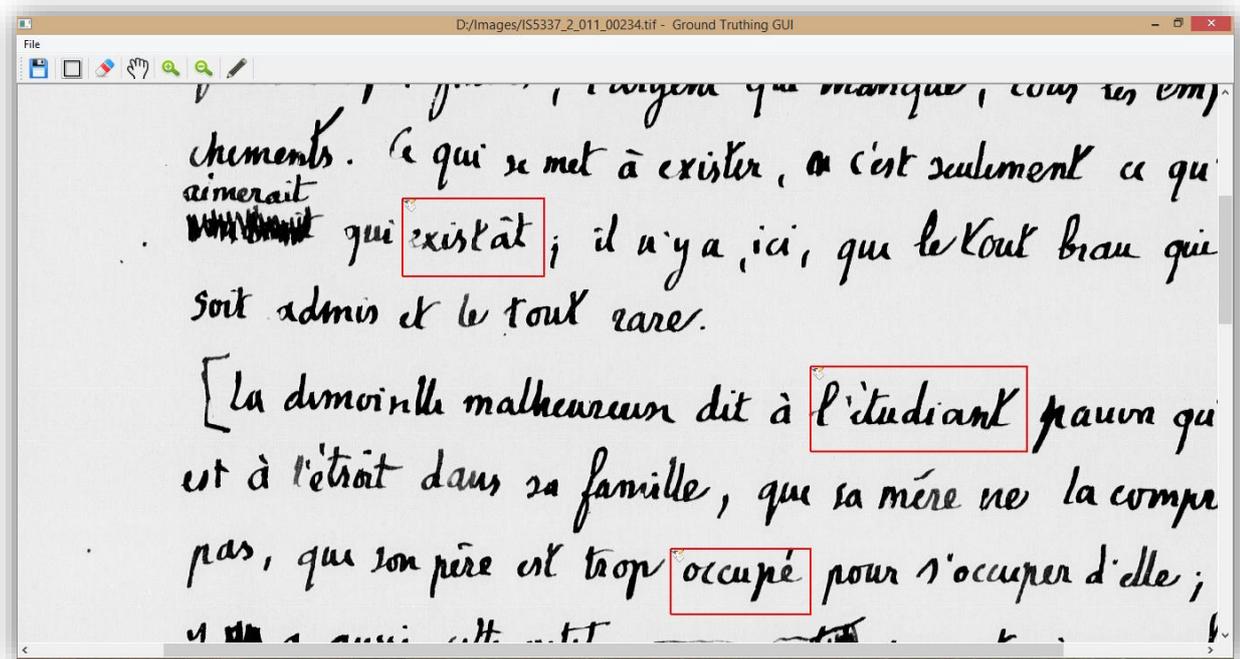


Fig. 9. Commenting the scanned text (Step 4). The user can add other supplementary comments to the text.

8. By clicking on , the user saves all the notes in a file having the same name of the image. However, its extension is TXT. This file will be created in the same repository of the image (see Fig. 11).

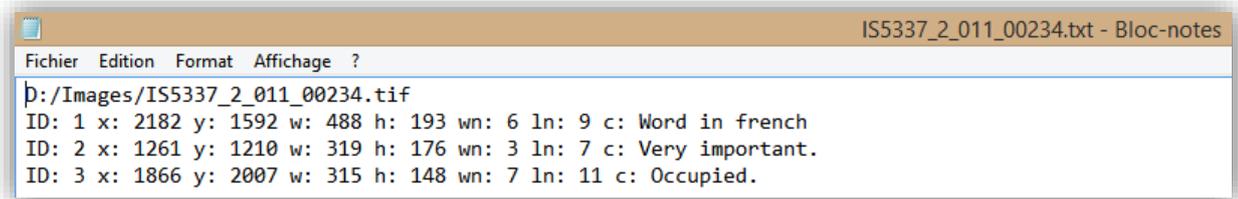


Fig. 10. Commenting the scanned text (Step 4). The user can add other supplementary comments to the text.

	ISS5337_2_010_00092.tif	22/11/2013 15:31	Image TIFF	16 537 Ko
	ISS5337_2_010_00093.tif	22/11/2013 15:31	Image TIFF	16 668 Ko
	ISS5337_2_011_00234.tif	22/11/2013 16:22	Image TIFF	17 931 Ko
	ISS5337_2_011_00234.txt	10/01/2016 09:37	Document texte O...	1 Ko
	ISS5337_2_011_00235.tif	22/11/2013 16:22	Image TIFF	17 768 Ko
	ISS5337_2_016_00164.tif	25/11/2013 08:15	Image TIFF	16 104 Ko
	ISS5337_2_016_00165.tif	25/11/2013 08:15	Image TIFF	16 233 Ko

Fig. 11. The text file is created in the same repository of the image.

9. If the user wants to add other notes to the document, he MUST open the TXT file (see Fig. 13 and 14). Otherwise, if he opens again the TIF file (see Fig. 12), he will lose all the modifications and annotations.

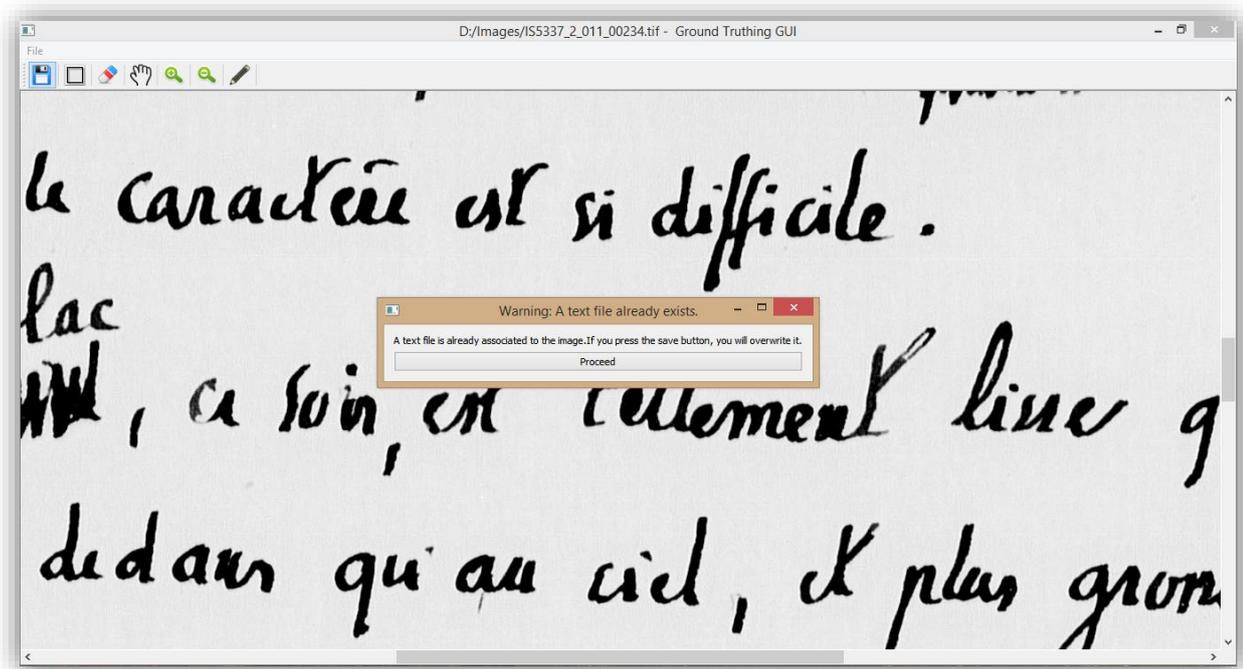


Fig. 12. If the user opens an annotated TIF file, he will lose all previous annotations and rectangles.

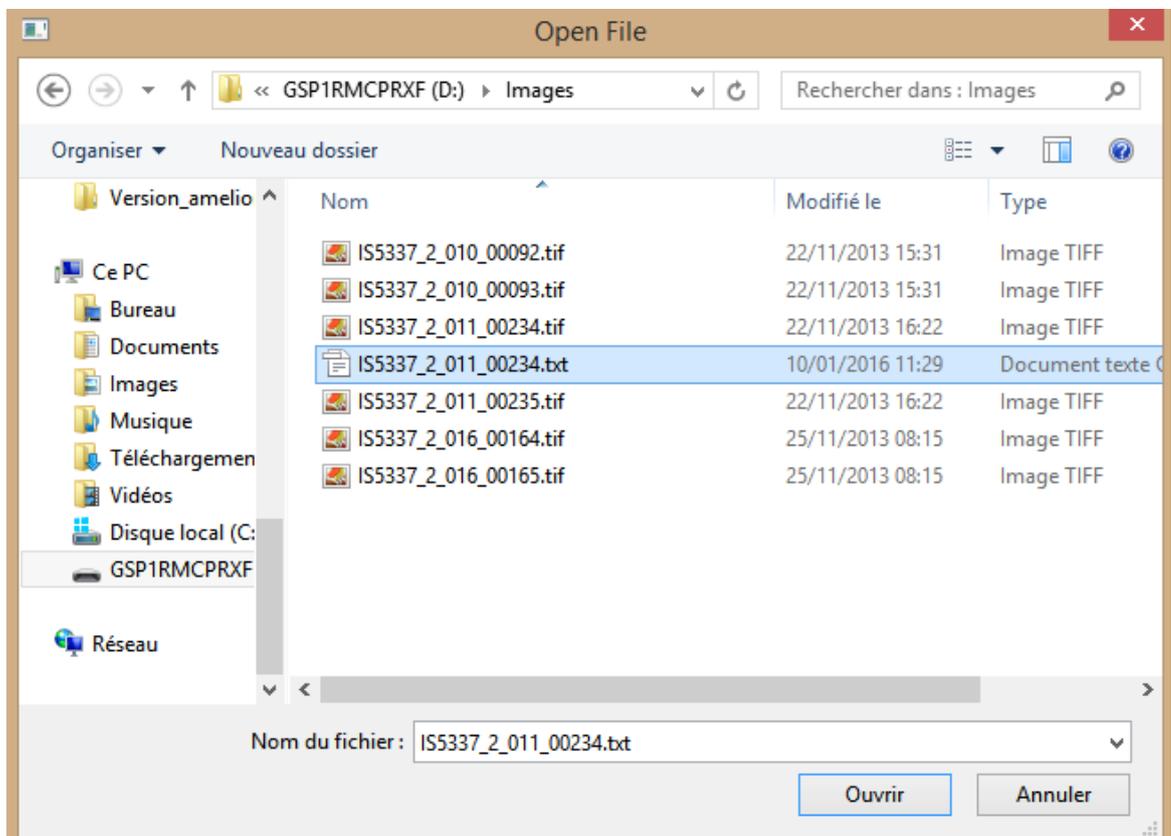


Fig. 13. Open a text file related to a TIF image.

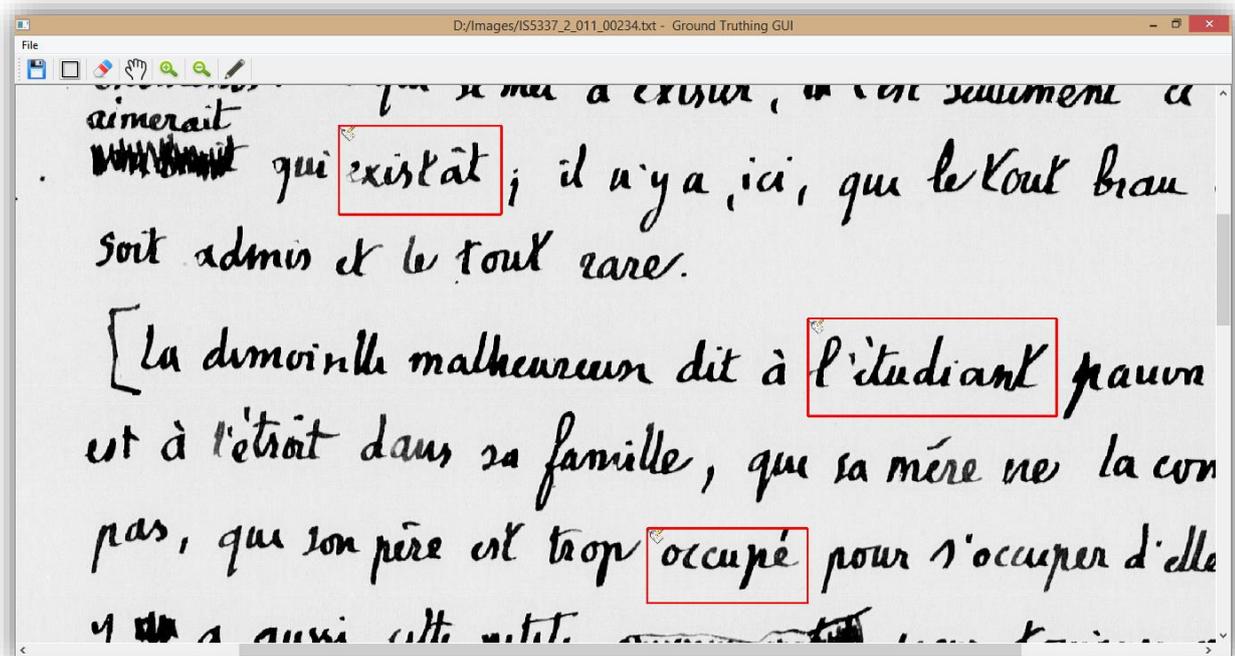


Fig. 134. If the user opens directly a text file linked to a TIF image, he will retrieve all the annotations and rectangles made previously and add new ones.

10. The user is able to modify a rectangle by pressing the modify button  and selecting the rectangle he wants to change (see Fig. 15).

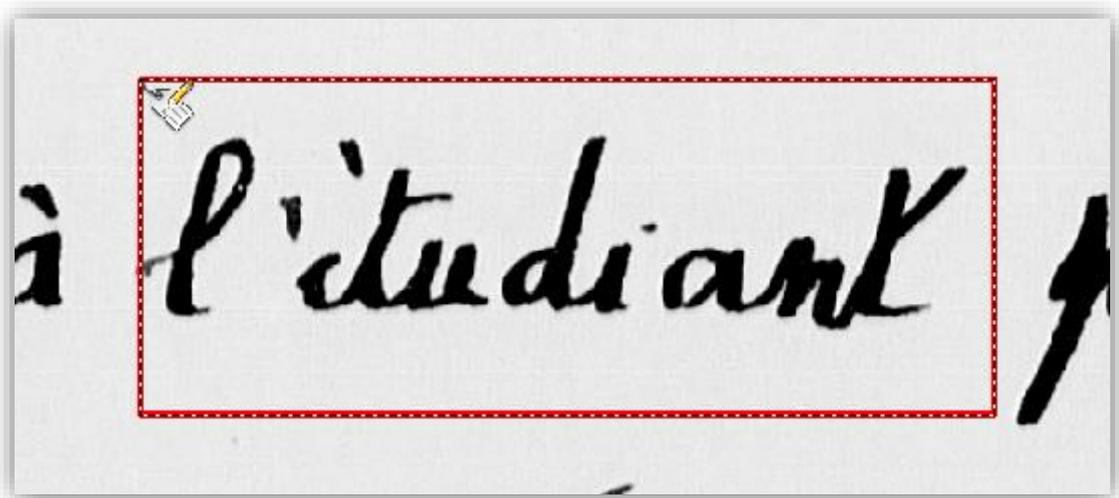


Fig. 15. This rectangle is going to be modified by the user.

11. Deleting a rectangle is also possible. The user needs to press the delete button  and selecting the rectangle he wants to remove. Note: A window will appear asking the user for confirmation (see Fig. 16).

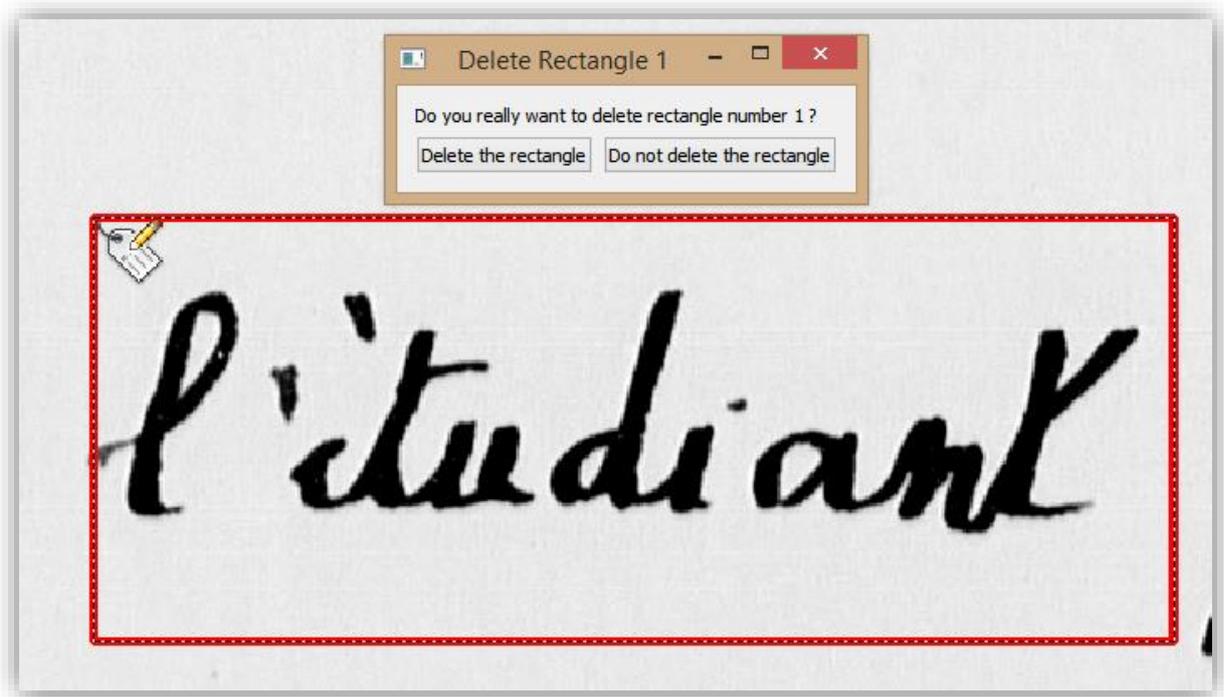


Fig. 16. A window appears asking the user if he really wants to delete the rectangle.