

Purpose:

“analy_faisc_py_gui” is a graphical user interface for **analyzing laser beam images**. The program will compute the **effective surface area** of the beams on the images, but can also do some simple fits to Gaussian model beams.

Installation:

“analy_faisc_py_gui” is written in python 3 using the pyqt5 package for the graphical interface.

I recommend the following installation procedure which will allow you to use the program, but also to modify the python files (if you find bugs etc.):

- 1) Install the up-to-date version of Miniconda from this web-site:
<https://docs.conda.io/en/latest/miniconda.html>
When you run the installer choose the recommended “only me” option and tick “register as default Python”.
(At least on Windows), this will give you access to an application called “Anaconda Powershell Prompt”.
- 2) Open the Anaconda Powershell Prompt. (I use the windows search bar writing “anaconda”.)
You should see something like: (base) PS C:\Users\Frank>

You can now go further in two ways. Either use the “environment.yml” file that contains the names and version of the needed packages (→ One step installation) or install the packages one by one using conda (→ Step by step installation)

One step installation (takes 5 min on my computer)

- 3) Create a new environment where to run the project in and install the needed packages in one step. (In this file I will use the name “env_analy_faisc”, but you can use any name you want.)

```
conda env create --name env_analy_faisc --file "C:\whatever is my path to this \environment.yml"
```


(For more information you may check out
<https://docs.conda.io/projects/conda/en/latest/user-guide/tasks/manage-environments.html>)
This creates a sub directory on your hard disk. (conda tells you where it will go before creating it... usually in C:\Users\Frank\miniconda3\envs\ or similar)

Now go to “Preparing the project directory and testing” below.

Step by step installation

- 3) Create a new environment where to run the project in by typing by using “conda”. (In this file I will use the name “env_analy_faisc”, but you can use any name you want.)

```
conda env create -n env_analy_faisc
```


(For more information you may check out
<https://docs.conda.io/projects/conda/en/latest/user-guide/tasks/manage-environments.html>)

This creates a sub directory on your hard disk. (conda tells you where it will go before creating it... usually in C:\Users\Frank\miniconda3\envs\)

- 4) Now activate the environment by typing:
`conda activate env_analy_faisc`
 Your prompt should change to: (env_analy_faisc) PS C:\Users\Frank>
- 5) Now install a compatible version of python and some other packages in the environment by running:
`conda install python=3.7.6`
- 6) Then continue with
`conda install -c conda-forge numpy=1.20.3`
`conda install -c conda-forge scipy=1.5.2`
`conda install -c conda-forge pyqt`
 (check that this installs pyqt version 5.12.3)
`conda install -c conda-forge matplotlib=3.5.0`
`conda install -c conda-forge scikit-image=0.18.1`
 and finally:
`conda install -c conda-forge openpyxl=3.0.9`
 At least in this order I did not get any error messages during install. Finally, you can close the Anaconda prompt window. (The environment directory now has 1.5 GB.)

Preparing the project directory and testing

- 7) Now you can check if everything works. For this make a project directory (different from the environment directory) in which you copy the files:
 - AeffGUIv6.py
 - fitting_module_v2.py
 - launch_AeffGUIv6.bat
 - Best also environment.yml
- 8) Then make a subdirectory named \doc_files\ in which you copy the files:
 - tab5_documentation.html
 - banana_select_roi.jpg (just in case it would like to display ;-)
- 9) Using notepad or another editor you have to modify launch_AeffGUIv6.bat to use your python directory and the right environment.


```
call C:\Users\Frank\miniconda3\Scripts\activate.bat
C:\Users\Frank\miniconda3\envs\env_analy_faisc
call python AeffGUIv6.py
pause
```

Attention, **here** should be your user name.
 Attention, **here** it can be **ana**conda or **mini**conda.
 Attention, **here** should be the environment name that you decided to use.
- 10) Save the .bat file and double-click it to see if it works. (If you received the files by e-mail you may need to rename the launch_AeffGUIv6.txt file to launch_AeffGUIv6.bat because .bat files are prohibited in e-mail.

Usage

Make sure to read the text in the last tab. It describes the most important steps. Even if I did not succeed to embed the image illustrating how to select the limit of the background.

Allowed file formats

AeffGUI can read 64-image wcf-files from the Dataray cameras or tiff files in subdirectories.