

Python Software Foundation

LiberTEM | Code snippet for analysis in GUI

Easier transition between GUI and API scripting

ORG : Python Software Foundation

Sub-org : LiberTEM

Mentors : Alex (@sk1p), Dieter (@ueulle)

About Me :

- Name : Abijith B
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I'm a third year computer science student. I love to work with python language. I have experimented with many things in python such as automating tasks, web crawling, data visualization. I'm also interested in machine learning. I have completed online courses regarding deep learning , now I'm trying to practice with TensorFlow.

I never had an opportunity to work on a real world project. I later learned about open source contribution and GSOC. My first pull request to get

merged was with LiberTEM. It gave me confidence to work with github workflow. It also helped me to improve my coding and documentation skills. LiberTEM has a good community that helps beginners like me to get started. LiberTEM also has interesting projects which I would like to contribute in future. I'm currently learning react and typescript for enhancing my skill for this project.

Code Contributions

As a beginner to Github workflow and open-source contribution these pull requests helped to gain confidence. Pull requests are mostly documentation, through which I have learned the basics of LiberTEM .

List of all merged [Pull requests](#) I have made. The details are as follows:

1. Open browser after starting server [[#81](#)](merged)
It was my first PR to get merged in an open-source organization.
New feature to open browser after starting the server.
2. Improved docs for installation [[#598](#)] (merged)
Added resources in the installation document for helping beginners.
3. Update screenshots in usage documentation [[#591](#)] (merged)
Old screenshots were replaced by new ones. Also added documentation Of ROI and stddev features.
4. RAW : TypeError when omitting detector_size [[#600](#)](merged)
Understandable error messages are generated when detector_size is omitted.
5. Added progress bar support for Context.map and Context.run[[#655](#)](merged)

6. Improved installation docs [[#664](#)] (merged)
Instruction generalised for different python versions.
7. Added citation of dataset used [[#650](#)] (merged)
It is only a part of issue [#588](#), further improvement will be added later.

Project Information

Sub-Organisation : LiberTEM

Project Abstract :

It is easy to use GUI, but for advanced purposes we have to use scripting , notebook.

The aim of the project is an easier transition between GUI and scripting.

Project Goal :

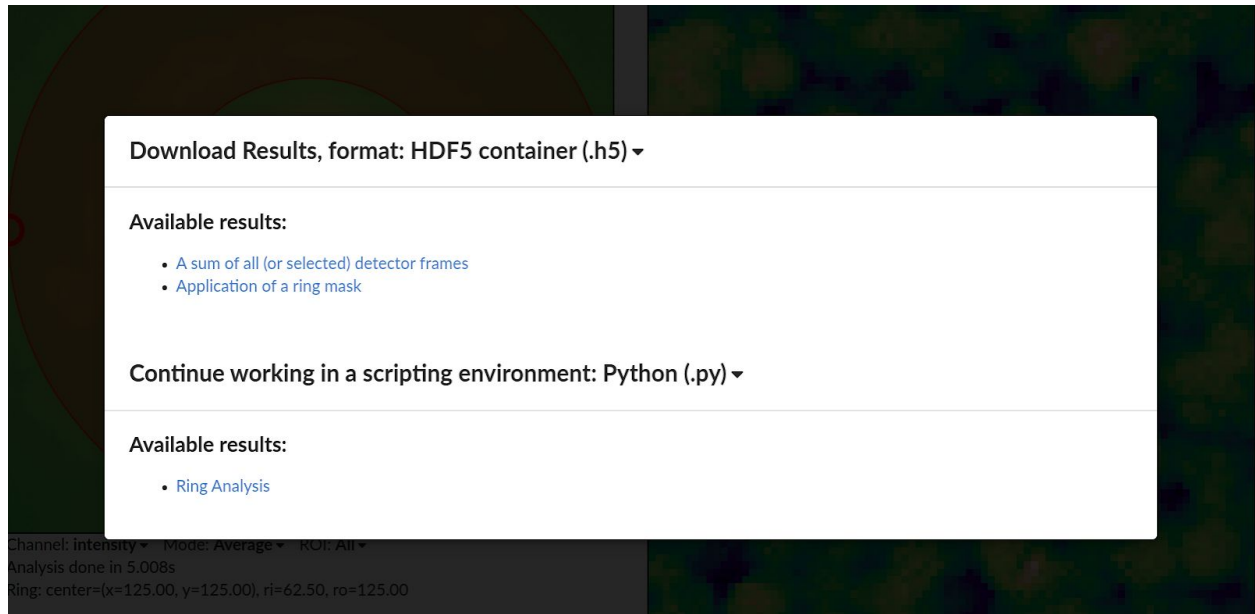
- Complete python script corresponding to an analysis made by a user in GUI can be generated. Templates are created for each analysis. When a user requests a script, templates are filled with corresponding parameters and a python script is generated.
- Notebook file is also generated in a similar way, template would be different.
- Also an option to copy parameters directly from the GUI. Currently some parameters can be provided only using point and click. GUI improvement to provide parameters directly.
- Generate connection code for remote cluster connection.

Project Details :

Script corresponding to GUI

Script corresponding to analysis is generated

Example :



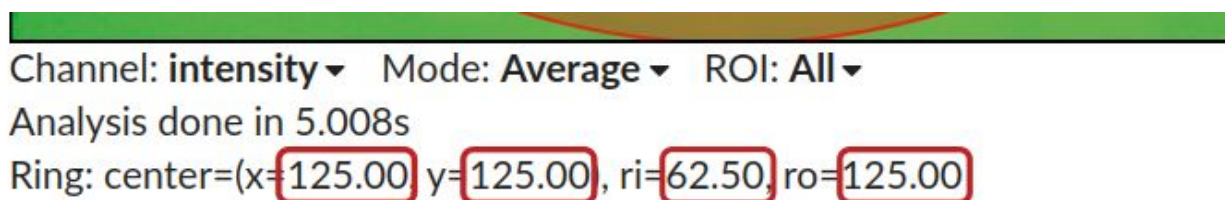
(design can be improved in future)

Python script and Jupyter notebook file will be available for download. Also the script will be available in a text box for copying relevant parts as user needs.

Components

- Template for script and notebook [easy win]
- Functions to fill template with parameters [uncertain / Difficult]
- Integrating feature to GUI [easy win]

Copy and Provide Parameters directly



The parameters marked can only be changed by dragging the handles in the GUI. So an option to provide the parameters directly to GUI. Also an interface to copy the value of parameters.

Component

- Copy parameters directly from GUI
 - Interaction for user to copy the parameters (GUI element) [easy win]
 - Function to copy parameters [uncertain]
- Improve the current GUI to accept the parameter
 - GUI elements to accept input parameter [easy win]
 - Update GUI with new parameters [uncertain / difficult]

Remote cluster connection code

If GUI is successfully connected to a remote cluster, the connection code should be generated and an option to copy the code.

Component

- Template for connection code [easy win]
- Function to fill the template [easy win]
- GUI element to deliver code [easy win]

Weekly timeline

Pre-GSoC (April 6 - May 4):

- Go through all analysis in GUI to familiarise, then it will be easier to create templates.
- Go through the codebase and solve issues to get familiar with LiberTEM.
- Complete learning Typescript and Redux .

Community Bonding (May 4 - June 1):

- Work on issues.
- Discuss the different implementation methods.

Week 1 (June 1 - 8) :

- Familiarize with functionalities provided by GUI [2 days]

- Discuss with mentors, users about the design of Template for notebook
- Create template for notebook [2 - 3 days] [Easy win]

Week 2 (June 8 - 15):

- Familiarize with how parameters are available in current system [2 days]
- Discuss different method for filling the template for notebook [2 - 4 days] [Uncertain]
- Build prototype of shortlisted methods [1 day]
- Implement function to fill template for notebook [2- 3 days]

Week 3 (June 15 - 22):

- Continue implementing function to fill template for notebook if incomplete [2 days]
- Discuss different ways to deliver the notebook
- Build prototype of shortlisted ways [1 day]
- Integrate option to download notebook with current GUI [1 day]

Week 4 (June 22 - 29) :

- Review from mentors & Feedback from users
- Improvement and redesign [2 - 3 days]
- Bug fix [3 - 4 days]

Week 5 (June 29 - July 6) :

- Discuss with mentors, users about the design of Template for python script
- Create template for script [2 - 3 days] [Easy Win]
- Discuss different method for filling the template of script [2 - 4 days] [Uncertain]

Week 6(July 6 - 13) :

- Build prototype of shortlisted methods for filling the template of script [1 day]
- Function to fill template for script [3-4 days] [Uncertain]

Week 7(July 13 - 20) :

- Integrate option to avail script for download and also inside textbox [1-2 day]
- Review from mentors & Feedback from users
- Improvement and redesign [2 - 3 days]

Week 8(July 20 - 27) :

- Bug fix and documentation [4 - 5 days]
- I would like to complete previous works, if they are not finished as expected.

Week 9(July 27 - August 3) :

- Familiarize with handling user input in GUI [2 day]
- Discuss with mentor and user about design
- Interaction for user to copy the parameters [1 -2 day]
- Function to copy parameters [1-3days]

Week 10(August 3 - 10) :

- Review and second development for improvement/redesign [1-2 days]
- Feedback from potential users
- Create GUI elements to accept parameters [1 -2 day]
- Update GUI with new parameters [2-3 days]

Week 11(August 10 - 17) :

- Review and second development for improvement/redesign [1-2 days]
- Feedback from potential users
- Writing documentation , bug fixing and add tests [2 -3 days]

Week 12(August 17 - 24) :

- Complete unfinished work
- Create template for cluster connection code [1 day]
- Integrate function to fill parameter with earlier developed for script [2 days]
- Design & Create GUI element for delivering connection code for remote cluster connection [1-2 day]

Final week (August 24 - 31) :

- Complete remaining work.
- Discuss future plan to work with LiberTEM after GSoC

Other Commitments

End Semester Examination (May 18 -) :

- Exam dates are changed due to covid - 19 spread. Will update once new exam dates get published.

I don't have any other commitments or summer plans during GSoC. In case something comes up, I will make sure to inform my mentor a week before. I have been contributing solely to LiberTEM since last month. I'm confident that I can finish the project within the proposed timeline. I will be extremely happy to be a part of LiberTEM this summer.