Google Summer of Code

Open-Source Simulations for Gas Detector on Python

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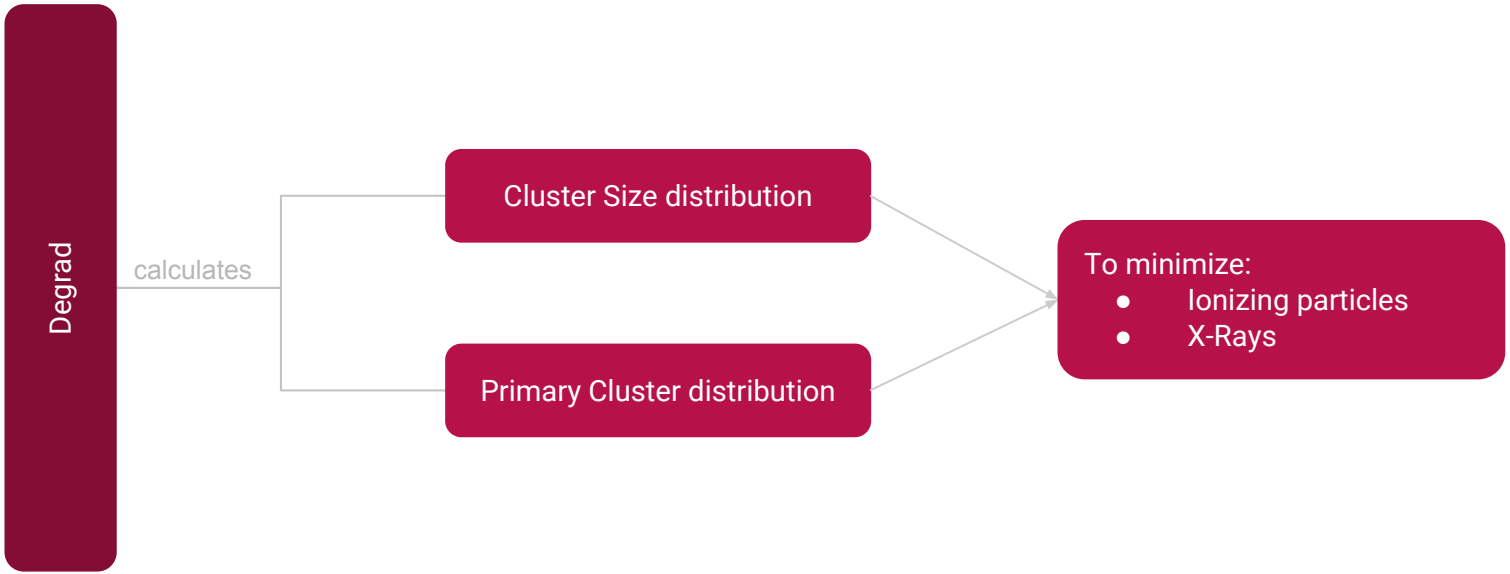
About Degrad



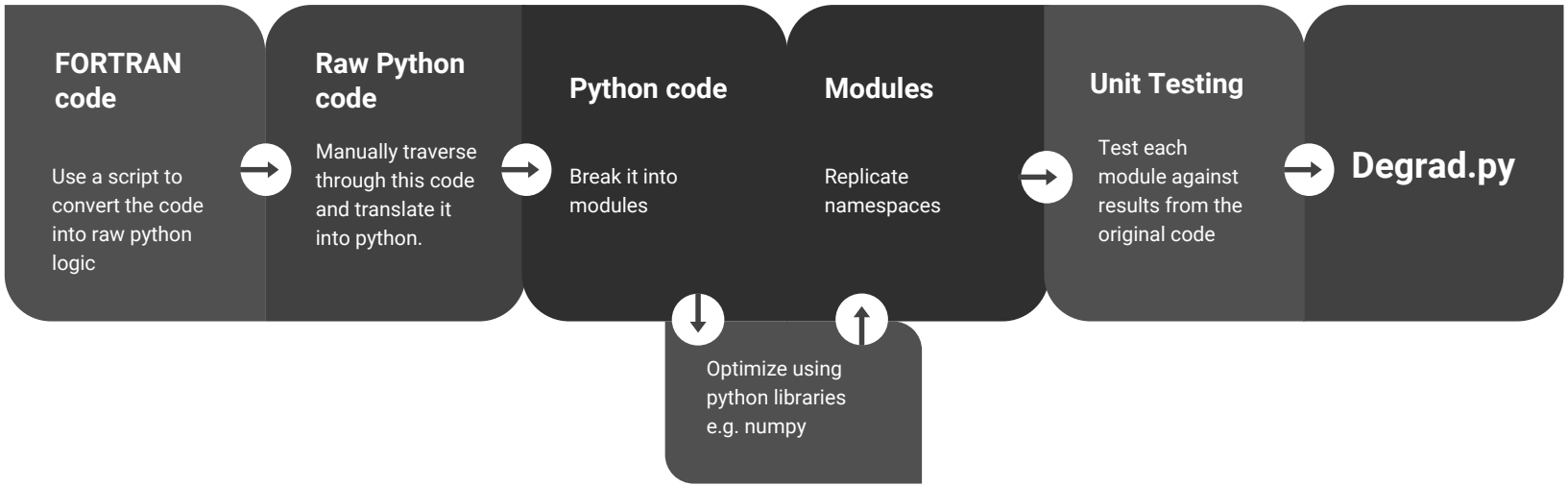
Definition of problem

- Degrad is currently a FORTRAN routine of over 80k lines of code.
- Although fast, it's difficult to engage more developers

Aim

To create a modular python program for degrad and facilitate maintenance and further development.

Methodology



What have we achieved ?

Modular Degrad.py

Each function has been made into a separate module.

Namespaces have been replicated to allow communication across modules

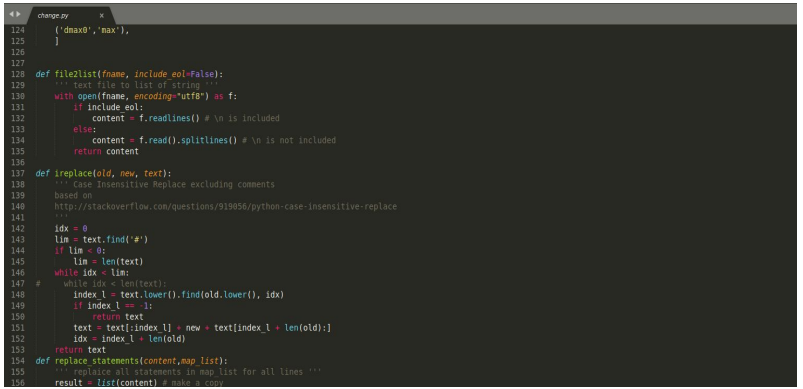
Over 50 modules

Semi-Automated translator

A script to translate FORTRAN into crude python.

A methodology for fastest translation (description of tools, libraries and algorithms).

Helps facilitate translation of very large projects.

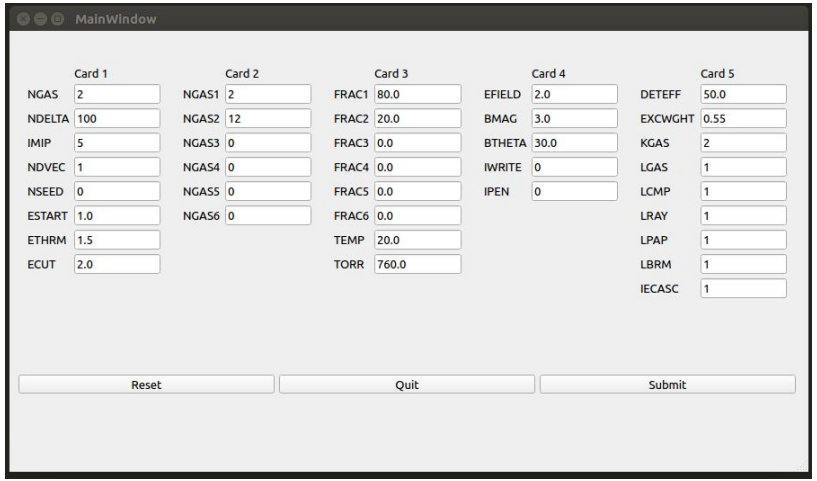


User Interface

PyQt 5 user-interface to ease the interaction with degrad (python and fortran).

Include graph plotting options.

Make degrad accessible to researchers with little acquaintance with terminals.

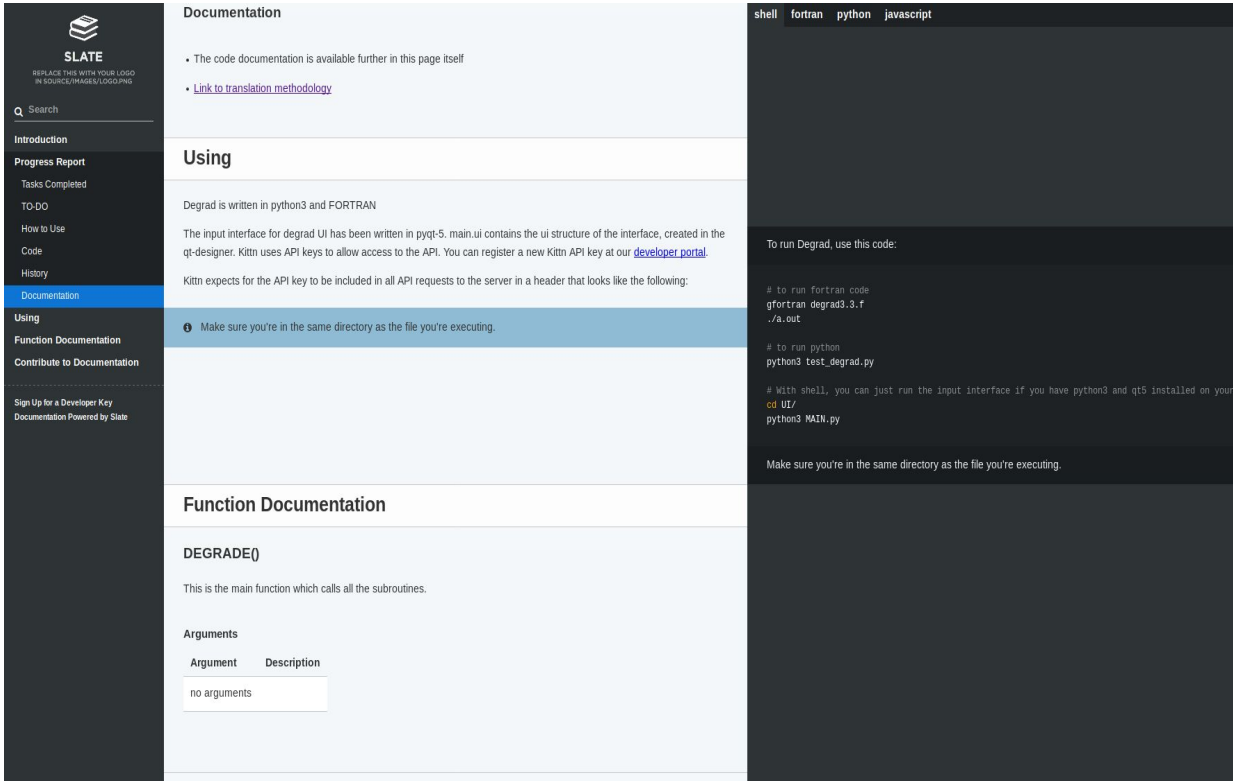


Documentation

Documentation using slate framework.

Can be hosted on github itself.

Display color formatted code and documentation side-by-side.



Future plans

Implement OOPS

Parallelize all code

Include more plotting options

Translate MAGBOLTz and other FORTRAN routines into python.

THANK YOU

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