Python Project Initial Proposal

1. Purpose:

The goal of this project is to develop a program that is able to take in raw data from gel quantification (eg. radioactivity signal), fit into kinetics equations, generate fitting curves and derive values for kinetic parameters.

1. Rationale & Application:

Typical procedures in our lab to analyze radioactivity signal on a gel after electrophoresis are: Firstly, bands on the gel to be analyzed are selected using ImageQuant. Secondly, a volume report containing intensity measurements of each band on the gel is generated by ImageQuant and the raw data are copied to an excel file. Thirdly, raw data are processed in excel (normalize data with background subtraction, fraction calculation, etc.). Finally, the processed data set are plotted using GraFit and fit with manually inputted non-linear equations to estimate kinetic parameters.

As you can see, this protocol is quite tedious and requires a large amount of manual works. It is extremely time-consuming when you have piles of data sets to be analyzed.

Therefore, I want to try to build up a method which will automate the third and final steps in our current protocol.

1. Target User:

My lab mates or any experienced researchers who do similar kinetics quantification.

1. Target Operating System:

Grafit has restricted our current analysis in Windows. I would like my program to be compatible with both OSX and Windows.

1. Risks:

I want to build a GUI to the final program, but it could be challenging giving my current understanding of Python. Once achieved, the program can be easily used by non-programmers.