**Overview**

My thesis works to increase the user’s ability to use a GUI to interact with a model in three dimensions and tag and define individual volumes in the open software environment of Paraview. In order to accomplish this task, code development will need to be performed to add new toolbars to the GUI. Some of the capabilities added will be more robust control over picking volumes and labeling them with properties that are MCNP-related—boundary conditions, materials, tallies, etc.

**Required Work**

A nowhere near exhaustive list of work to be done and capabilities that must be added follows.

* Use existing modules, but make them more Monte Carlo (MC) applicable.
* Add complex meshing capabilities using libraries.
* Develop GUI-based tools
  + For data modeling
  + To access meshing methods
  + Include filtering of options when picking or tagging
* The GUI should focus on MC options and methods.
  + Create and assign materials, tallies
  + Create an input file

**Required Knowledge**

An in-depth knowledge of Paraview is needed from knowing how to use the current tools all the way to adding plug-ins. In addition, a general understanding of VTK and QT is required. Finally, C++ will be the used programming language to develop these modules and plug-ins, thus, it must be well understood.

**Benefits**

* Open Source
* Streamlined tool to handle mesh/geometries
* Mesh/geometries are treated as the same rather than individually
* A tool more powerful and useful for the MC process than Cubit (currently used)

**Looking Forward**

* Write wiki article to lay out understanding
* Download and review Paraview
* ...Begin