Mean Value Coordinate Deformation Plugin for Maya
Getting Started and Caveats Guide
Getting Started with Maya Plugins

1. Decide on a language
There are several ways to create a plugin for Maya: using the C++ API, the Python API, MEL Scripting. Among these, the C++ API is the most thorough in terms of documentation and example files. The documentation of the Python API consists of a listing of the differences between the C++ and Python APIs, and some basic introductory remarks. If you decide to use MEL, your plugin will mostly likely consist of a series of scripts instead of a compiled *.mll, however MEL is well documented and not difficult to learn. The advantage of using C++ over MEL is that you can import libraries into your project, design your own data structures etc. However you will have to learn the byzantine ways of accessing the information in the scene indirectly, which involves many levels of typecasting before you actually get your hands on, say, the location of a vertex. MEL implementations will allow easier access to data, but will not be as full featured.

The remainder of this guide assumes you are using the C++ API.

2. Learn about the Dependency Graph
You cannot do anything in Maya without a full understanding of the Dependency Graph. This entails that you will also have to thoroughly understand Nodes, the different types of Nodes and what they do, Attributes, and the Push-Pull methodology of updating scene information. Highly recommended is David Gould’s Complete Maya Programming Vol 1, Chapters 1 and 2, which covers all of these topics. If desired, you can jump right to reading the C++ API guide, which is available on the AutoDesk Maya website, however it does not explain the introductory topics as well as the book. If the book is unavailable it is adequate.

3. Visualize your plugin
Depending on what you want your plugin to do, you will only need to learn a subset of the API, which is a good thing because learning the full API may be difficult depending on the duration of your project timeline. Write down your expected result, such as being able to: load the plugin, load a mesh, display the mesh, select the vertices … After this step is done, you can refer to Section 4 – “DAG Hierarchy” of the online API guide to see what type of nodes you will need to implement in order to achieve your goals.
4. **Set up development environment**
After determining what type of nodes you need to learn about, Sections 5-12 of the online API guide cover what you need to learn to develop specific types of nodes, plugins, commands for Maya. The most convenient development IDE is Visual Studio 2008, because the Maya install comes with a plugin for Visual Studio that can create a MLL project, and set up all the necessary includes. You can also automatically configure it to produce a plugin according to your needs, whether you wish to develop a command, plugin or a plugin with Undo and Redo enabled.

After setting up your development environment, locate the plugin folder within the Maya bin directory. After you compile, you must copy the plugin to this directory in order for it to display as loadable.

5. **Learn the API**
Now you can really begin to familiarize yourself with the various classes you need.

At this stage the most valuable resource is the example plugins, the full source code of each example is available in the API Reference, which is usually found on the same webpage as the API guide. The API guide contains short explanations of what each of the example plugins does, however these explanations are paltry at best. No matter what it is that you plan to do, it is likely that there is at least one example that bears a similarity to your goal. Expect to spend a few hours downloading, compiling, experimenting with, and reading the source code for these examples.

6. **Learn rudimentary MEL**
If you are using the C++ API, you will not need to learn much MEL. After you have compiled a plugin and loaded it in Maya, the minimal amount of interaction you will need is to know how to create nodes, set the attributes of nodes and fetch the value of an attribute. The commands are `createNode`, `setAttr`, `getAttr` respectively. If your plugin is self contained, as most are, these are the only MEL commands you will need to know in order to initialize your plugin.