Week 1 Report (6/9/16)

Project Tool Update

Initially, the project tool was not working on my computer. The source code required updated libraries such as glut32 header and dll files. Linker library files also needed to be set through visual studios. Values in the stdafx.h file had to be changed to match my target Windows OS which is Windows 10. I also changed some identifiers to fix some errors the tool was having.

Review and Readings

I reviewed the slides going over vector field analysis from your data analytics class which had content mostly covered over during meetings. I went through additional research papers and lectures slides to further familiarize myself with the information. I have been taking notes of all my readings to keep track of all the concepts and study them better. My interpretation is there exists streamlines on a vector field (to visualize flow) and that the periodic orbit around a fixed point classifies which type of steady flow it is (sink, source, saddle). Each fixed point can also be classified by its eigenvalues from a matrix representation. I will keep note of the equations from the readings and what you showed me that apply the eigenvalues mathematically such as Jacobian analysis. I have not fully read over the math and programming behind it but it is my next objective. A vector field is similar to a graph where each point is assigned a vector. 2D vector fields are defined as a discrete mesh which incorporates grid generation and groups the points as triangles to create something like a wireframe.

Tool exploration

There was an issue when exploring the tool dealing with deleting and adding elements. After deleting an element no further elements can be added. Checking ‘show grass’ and ‘use color’ together crashed the program. I do not know the reason for both of these bugs. A couple of functionality I did not understand while working with the tool was frame control. We went over it during our meeting and I have a better understanding of how to save frames and what the functionality does.

Conclusion

In conclusion, I will continue to explore the different functionality and document accordingly to what they do so that I can replicate. I understand at the surface level of adding and assigning element unto the vector field and the concepts between how the fixed points interact with each other. The next step for me would be to look over the code and understand the specifics to create model pseudocode. I will also look over the different types of cross-platform applications and consider which fits well with my programming style and the project demands.