

# Design of a 3D Graphics Engine

## TJHSST Senior Research Project Proposal

### Computer Systems Lab 2009-2010

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## **1 Purpose and Scope of the Research Project**

The goal of this project will be to create a graphics engine for use in the use of computer games and other 2D or 3D applications. This engine will need to be able to display 2D and 3D graphics and get input from the keyboard and mouse, at minimum. However, it will also need to be able to be used in a variety of projects, unlike most other engines that are only suited for one type of project.

## **2 Background and Review of Current Literature/Research in this Area**

- Multi-threaded Game Engine (Tulip, Bekkema, Nesbitt)
- Interactive 3D Geometry in OpenGL (Welsh)
- Development of a 3D Graphics Engine (Kassing)
- Modular Architecture for Computer Game Design (McNeill)

### **3 Procedure and Methodology**

I will use C++ and OpenGL. Since I am, for the most part, unfamiliar with OpenGL, my initial program will only really need to be able to display graphics and get input, without necessarily being an engine. The engine will eventually use a lot of these same components.

Right now, there is little I can do aside from running my program and making sure it does exactly what it's supposed to. My program is not yet an engine; it is merely a program that I am using to ensure that all the methods I will eventually use will work correctly. Once my project is complete, in order to test its features it will be necessary to create one or more games that use it. It would be best to create games or other programs of widely varying genres to ensure that the engine works in all scenarios.

### **4 Expected Results and Value to Others**

As I program in my spare time, I am especially interested in the results of this project. If the engine works correctly, it should be much easier to create 2D or 3D programs, which is one reason I am doing this project. Creating 3D programs from scratch is an especially difficult endeavor, and hopefully this engine will take at least some of the workload off. After this, anyone using this engine should be able to create various programs and games with relative ease.