Notes for ECE 30834 - Fundamentals of Computer Graphics

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Contents

Course Description

Fundamental principles and techniques of computer graphics. The course covers the basics of going from a scene representation to a raster image using OpenGL. Specific topics include coordinate manipulations, perspective, basics of illumination and shading, color models, texture maps, clipping and basic raster algorithms, fundamentals of scene constructions.

Introduction

This class will be focused on *interactive* computer graphics over non-interactive graphics. In this class we will implement an interactive computer graphics engine in a basic programming language like C. A good understanding of professional and debugging and unit testing is required.

Let's look at a basic example of a GUI with some fundamental components.

Listing 1: GUI

```
#pragma once
#include gui.h
#include frambuffer.h

class Scene {
    GUI *gui;
    FrameBuffer *fb;
    Scene();
    void DBG();
    void NewButton(); // when this is clicked,
    // there is a callback to the
    // code that made the scene
}

extern Scene *scene;
```

Frame Buffer

The frame buffer stores the data that is going to be displayed on the screen. In the case of Listing 1 is a 1d array of unsigned integers.

Callback

Scene

Drawing

Animation