

# COMPUTER GRAPHICS ASSIGNMENT #3 OPENGL MODELER

August 27, 2018

## Introduction

In this assignment you will replace your software renderer with an OpenGL version.

## REQUIREMENTS

Your assignment is to use OpenGL for rendering. Depending on the current state of your software, there are two approaches you may follow:

1. Change the (internal) implementation of the renderer so it will use OpenGL.
2. Discard the renderer and let the scene handle calls to OpenGL directly.

You can choose either option. Here are a few implementation hints you may consider:

1. When a model is first created, you should create a vertex buffer object for the model and use the handle to the model. When the model should be drawn, the model will pass only the handle – not the geometry – to the renderer.
2. Shader programs can be managed by the scene. For example, the scene might initialize several programs when the application starts (or ask the renderer to do so). Then you can use the handles to the shaders. Look for `InitShader.h` in your project, you can find an example of how to use it in `Renderer.cpp` (look in the function `Renderer::initOpenGLRendering()`).
3. If you discard the renderer, all calls to the renderer should be replaced with calls to OpenGL.
4. Some of the states the renderer handled previously may now need to be handled by the scene.

In addition to implementing all existing features (of the first two assignments) in OpenGL, you should also implement the following using shaders:

- Texture mapping. Use texture-coordinates when available, and additionally implement two canonical texture coordinates (for example, projection on a plane). To load textures you can use `LodePNG` which we provided for you in your GitHub repository.

You will need to pull it from the base repo. To do that, enter the following command:

```
git pull base master
```

After you will pull the changes, a new folder will appear in the root directory of your repository named Assignment3. This folder contains the pdf of the assignment. In addition your third ThirdParty will contain LodePNG. It will only work if you previously added the base assignment repository as a remote with the following command:

```
git remote add base https://github.com/HaifaGraphics/ComputerGraphics2018.git
```

## REQUIREMENTS

Submission is mainly frontal, but you should also submit your code electronically. Before the submission deadline, we will schedule timeslots for you to come and see us. Presentations will last 15-20 minutes, during which you will show us your work and answer our questions.