SoftRenderer

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Chapter 1

SoftRenderer

1.1 Introduction

SoftRenderer is a simple software-based rendering library written in C++.

1.2 Build

To build the whole project, either Code::Blocks or Visual Studio 2012 (or later) is required.

Author

Sk. Mohammadul Haque

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Chapter 2

File Index

2.1 File List

Here is a list of all documented files with brief descriptions:

Chapter 3

File Documentation

3.1 softrenderer.h File Reference

This header file contains declarations of all functions of softrenderer.

```
#include <meshlib.h>
#include <vector>
```

Include dependency graph for softrenderer.h: This graph shows which files directly or indirectly include this file:

Macros

- #define **SOFTRENDERER_API** extern

Functions

- SOFTRENDERER_API int sr_mesh_render_persp (MESH m, std::vector< FLOATDATA > &depthmap, std::vector< FLOATDATA > &scalarmap, FLOATDATA f, INTDATA h, INTDATA w, bool doscalar, FLOATDATA cutoff=0.0, FLOATDATA eps=0.0001)

  Perspective-renders a given mesh to a depthmap and optionally scalarmap.
- SOFTRENDERER_API int sr_mesh_render_ortho (MESH m, std::vector< FLOATDATA > &depthmap, std::vector< FLOATDATA > &scalarmap, FLOATDATA g, INTDATA h, INTDATA w, bool doscalar, FLOATDATA cutoff=0.0, FLOATDATA eps=0.0001)

  Orthographic-renders a given mesh to a depthmap and optionally scalarmap.

3.1.1 Detailed Description

This header file contains declarations of all functions of softrenderer.

Author

Sk. Mohammadul Haque

Version

0.1.0.0

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3.1.2 Function Documentation

3.1.2.1 sr_mesh_render_ortho()

```
SOFTRENDERER_API int sr_mesh_render_ortho (
            MESH m,
            std::vector< FLOATDATA > & depthmap,
            std::vector< FLOATDATA > & scalarmap,
            FLOATDATA g,
            INTDATA h,
            INTDATA w,
            bool doscalar,
            FLOATDATA cutoff,
            FLOATDATA eps )
```

Orthographic-renders a given mesh to a depthmap and optionally scalarmap.

Parameters

in	*m*	Input mesh (must contain faces, face-scalars are preferred)
out	*depthmap*	Column-major depth map
out	*scalarmap*	Column-major scalar map
in	*g*	Camera focal-length (in px)
in	*h*	Map height (in px)
in	*w*	Map width (in px)
in	*doscalar*	Render scalar map (true/false)
in	*cutoff*	Render front z-cut-off (default - 0.0)
in	*eps*	Render tolerance (default - 0.0001)

Returns

Error code (0-success)

3.1.2.2 sr_mesh_render_persp()

```
SOFTRENDERER_API int sr_mesh_render_persp (
            MESH m,
            std::vector< FLOATDATA > & depthmap,
            std::vector< FLOATDATA > & scalarmap,
            FLOATDATA f,
            INTDATA h,
            INTDATA w,
            bool doscalar,
            FLOATDATA cutoff,
            FLOATDATA eps )
```

Perspective-renders a given mesh to a depthmap and optionally scalarmap.

Parameters

in	*m*	Input mesh (must contain faces, face-scalars are preferred)
out	*depthmap*	Column-major depth map
out	*scalarmap*	Column-major scalar map
in	*f*	Camera focal-length (in px)
in	*h*	Map height (in px)
in	*w*	Map width (in px)
in	*doscalar*	Render scalar map (true/false)
in	*cutoff*	Render front z-cut-off (default - 0.0)
in	*eps*	Render tolerance (default - 0.0001)

Returns

Error code (0-success)

3.2 softrenderer.h

Go to the documentation of this file.

```
1
10 #ifndef SOFTRENDERER_H_INCLUDED
11 #define SOFTRENDERER_H_INCLUDED
12
13
26 #include <meshlib.h>
27 #include <vector>
28
29 #ifdef _WIN32
30 #  ifdef SOFTRENDERER_API_EXPORTS
31 #    define SOFTRENDERER_API __declspec(dllexport)
32 #  else
33 #    define SOFTRENDERER_API __declspec(dllimport)
34 #  endif
35 #else
36 #  define SOFTRENDERER_API extern
37 #endif
38
39
40 SOFTRENDERER_API int sr_mesh_render_persp(MESH m, std::vector<FLOATDATA>& depthmap,
       std::vector<FLOATDATA>& scalarmap, FLOATDATA f, INTDATA h, INTDATA w, bool doscalar, FLOATDATA cutoff
       = 0.0, FLOATDATA eps = 0.0001);
41 SOFTRENDERER_API int sr_mesh_render_ortho(MESH m, std::vector<FLOATDATA>& depthmap,
       std::vector<FLOATDATA>& scalarmap, FLOATDATA g, INTDATA h, INTDATA w, bool doscalar, FLOATDATA cutoff
       = 0.0, FLOATDATA eps = 0.0001);
42
43 #endif // SOFTRENDERER_H_INCLUDED
44
45
```

3.3 softrenderer.cpp File Reference

This header file contains definitions of all functions of softrenderer.

```
#include "../include/softrenderer.h"
#include <iostream>
#include <vector>
#include <cmath>
#include <limits>
#include <stdint.h>
#include <algorithm>
#include <assert.h>
```

Include dependency graph for softrenderer.cpp:

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