

Computer Graphics- 3D rendering

Submitted by
Chirag Bhardwaj, 01702805

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ABSTRACT

This project will try to implement the following features but will be completed at the end of the semester. The aim is to create a 3D object by drawing three 2D "elevations". Upon drawing, storing the coordinates of the elevations in a way that will allow the user to create a 3D model of the object from them. The user can also transform the object i.e. apply 3D (Translate/Rotate/Scale/Shear) transformations to the created object. The user also has the ability to view the object from multiple viewing angles and also transform camera/viewer or light sources. The project also provides the ability to generate different projections of the objects, edit/change perspective projection vanishing points and create texture/bump/environmental mappings for the object.

Table of Contents

| | |
|--|----------|
| 1. INTRODUCTION | 1 |
| 2. ANALYSIS AND DESIGN | 1 |
| 3. PROTOTYPE DESCRIPTION..... | 2 |
| 4. TESTING | 2 |
| 5. DEPLOYMENT OF THE SYSTEM | 2 |
| 6. LIMITATION OF THE SYSTEM..... | 2 |
| 7. CONCLUSION AND FUTURE WORK | 2 |
| 8. REFERENCE..... | 2 |

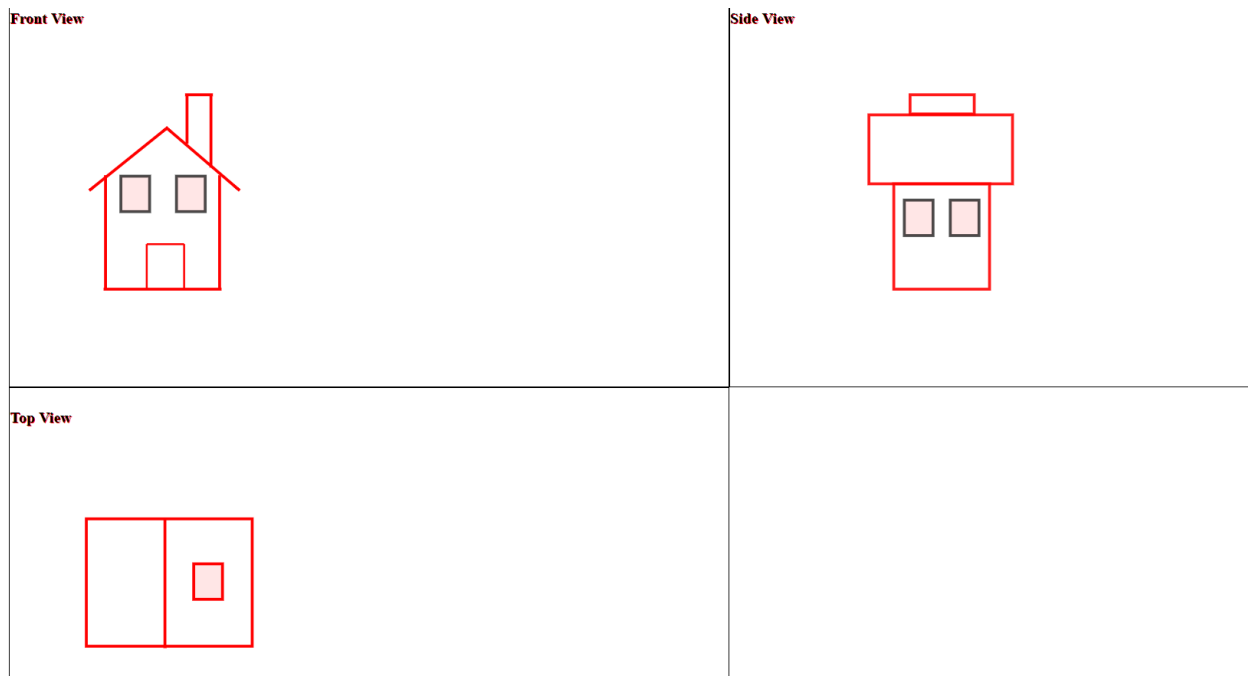
1. Introduction

The project will employ the use of WebGL which is a JavaScript API for rendering interactive 2D and 3D graphics within any compatible web browser without the use of plug-ins. WebGL is integrated completely into all the web standards of the browser, allowing GPU-accelerated usage of physics and image processing and effects as part of the web page canvas. WebGL elements can be mixed with other HTML elements and composited with other parts of the page or page background. Due to this reason I am choosing to work with it. The project will be able to render user defined images in 3D and also provide the ability to

- Transform the object
- View the object from multiple views
- Transform the lighting of the object
- Generate different projection of the object
- Change the perspective projection vanishing points
- Create texture/bump/environmental mappings of the object

2. Analysis and Design

- **Week 1:** The following design includes the Front View, the Side View and the Top View of an object (in this case a house).



3. Description

- **Week 1:** I made the above views to understand how the 3 different 2D projections will look like and this will help me in understanding how finally 3 different projections will come together to form a single 3D object which is one of the objectives of the whole project. Further I will try to apply transformations to this object in order to learn how transformations work.

4. Testing

5. Deployment of the System

6. Limitation of the System

7. Conclusion and Future Work

8. Reference