

# Virtual Reality for Interior Design

Prabhakar Mudliyar<sup>1</sup>, Yuvraj Ingale<sup>2</sup>, Sanket Bhalerao<sup>3</sup>, Onkar Jagtap<sup>4</sup>  
Computer Department<sup>1,2,3,4</sup>, Yuvraj Ingale<sup>1,2,3,4</sup>  
Email: [ingaleyuvraj8888@gmail.com](mailto:ingaleyuvraj8888@gmail.com)<sup>1</sup>

## ABSTRACT:

Virtual Reality is increasing day by day in the field of applied science and is an immersive, interactive system based on computable data. Virtual reality interfaces are a natural technique for presenting computer-based blueprint by amalgamation graphics with a vision of the real world.

The customers interactively control their local view, try out design options, and converse design proposals. They can use virtual graphical items that replacement for real objects which are not yet physically shaped or are not yet placed into the real design environment. We describe the underlying virtual reality system and in particular how it maps the virtual objects onto the real world when view through a head mounted display. An interior design application is used as an example to demonstrate the advantages of our approach. The goal of this paper is to put into practice the principles of Virtual Reality in developing Interior Design Software

## Index Terms- *OpenGL, Walkthrough, Interior Design.*

### I. INTRODUCTION

The key aim of the project is to help the customer with following options:

- DESIGN THE ARCHITECTURAL MODEL OF THE HOUSE
- DESIGN THE INTERIORS OF THE HOUSING MODEL.
- SELECTING THE APPROPRIATE TEXTURES OF THE OBJECTS .
- WALKTHROUGH OF THE DESIGNED HOUSE IS PROVIDED

### A. VIRTUAL ENVIRONMENT FEATURES

- Changes in software are easily reconfigurable.
- Highly unnatural environments can be created as well as a wide variety of natural ones.
- Are largely interactive and adaptive.
- Human sensing modalities and human sensory motor systems are widely used.
- The customer becomes highly interactive with computer system. synthesize environment and face a strong sense of presence in the artificial environment.

Virtual Reality is increasing day by day in the field of applied science and is an immersive, interactive system based on computable data .Dimensions, you'll have lament the fact that there is no simple way to choose and decide home items that would fit completely in your home. Our software aims at bringing the home tactics in life in a stunning 3-D. It will put you in complete control of how the 3D object

of 2D object is created. It turns your mobile device into a virtual reality environment as it pushes the limits of the 3D engine. When you choose dollhouse and walkthrough modes, the accurate detail and accessibility of your home layout will make you feel as though you've just walked in the front door.

There is a use for an application that would assist architects, interior designers, and design hobbyists. The combination of real planning and interior design is unmatched by any other application, and the 3D viewpoint puts it leaps and bounds above the rest.

Our project also provide the feature of walkthrough in which user can enjoy the feeling of real world.\The remainder of this paper is structured as follows: in Section II, we explain the model and the methodology used for the software development, Section III describes the environment used for generating 3-D view i.e. OpenGL, Section IV describes the selection of front end language for the software, Section V shows a brief overview of how the system would work and finally Section VI discusses future work and conclusion.

### B. VIRTUAL ENVIRONMENT FEATURES

- Changes in software are easily reconfigurable.
- Highly unnatural environments can be created as well as a wide variety of natural ones.
- Are largely interactive and adaptive.
- Human sensing modalities and human sensory motor systems are widely used.
- The customer becomes highly interactive with computer system. synthesize environment and face a strong sense of presence in the artificial environment.

Virtual Reality is increasing day by day in the field of applied science and is an immersive, interactive system based on computable data .Dimensions, you'll have lament the fact that there is no simple way to choose and decide home items that would fit completely in your home. Our software aims at bringing the home tactics in life in a stunning 3-D. It will put you in complete control of how the 3D object of 2D object is created. It turns your mobile device into a virtual reality environment as it pushes the limits of the 3D engine. When you choose dollhouse and walkthrough modes, the accurate detail and accessibility of your home layout will make you feel as though you've just walked in the front door.

There is a use for an application that would assist architects, ineroirs designers, and design hobbyists. The combination of real planning and interior design is unmatched by any other application, and the 3D viewpoint puts it leaps and bounds above the rest.

Our project also provide the feature of walkthrough in which user can enjoy the feeling of real world.\The remainder of this paper is structured as follows: in Section II, we explain the model and the methodology used for the software development, Section III describes the environment used for generating 3-D view i.e. OpenGL, Section IV describes the selection of front end language for the software, Section V shows a brief overview of how the system would work and finally Section VI discusses future work and conclusion.

## II METHODOLOGY

The application software will be designed using Component Based Development Model & SDLC. SDLC is a classical development method used as requirements are known in advance. In this model if existing classes are available their properties can be inherited. If the components are not available they can be designed as per requirement. Thus this model implements one of the most important properties oObject Oriented Methodology that is Software Reusability.

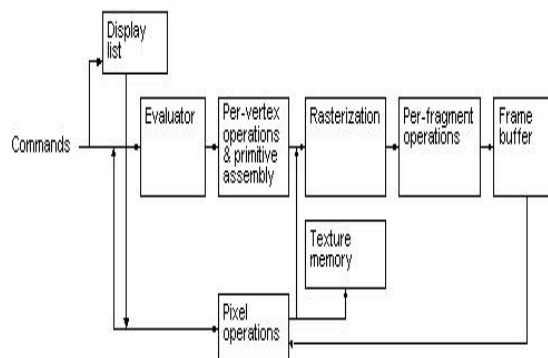
### OPENGL.

The OpenGL specification describes an abstract API for drawing 2D and 3D graphics. Although it's possible for the API to be implemented entirely in software, it's designed to be implemented mostly or entirely in hardware.

#### A. BASIC FUNCTIONS OF OPENGL.

The Fig. 1 shows the how the opengl will work to produce 3d environment.The fig shows various blocks that

shows the various processing blocks.



Block Diagram of opengl.

The segments, and polygons all of which are described by vertices. Vertices are transformed and lit, and primitives are clipped to the viewport in preparation for rasterization.

**Rasterization:** The pasteurization is process in which it takes 2d values as an input and stored it into input buffer to generate 3d view.

**Per-fragment operations:** These are the final operations performed on the data before it's stored as pixels in the frame buffer

#### B. PRIMITIVES AND COMMANDS.

OpenGL draws primitives—points, line segments, or polygons—subject to several selectable modes. You can control modes independently of each other; that is, setting one mode doesn't affect whether other modes are set (although many modes may interact to determine what eventually ends up in the frame buffer). Primitives are defined by a group of one or more vertices..Commands are always processed in the order in which they are received, although there may be an indeterminate delay before a command takes effect.

#### C. EVALUATORS.

Evaluator is used to evaluate the given input points, line, segments in 3d view. We can use evaluators to describe any polynomial or rational polynomial spines or surfaces of any degree.

**IV. VISUAL BASIC**

Visual Basic is a third-generation event-driven programming language and integrated development environment (IDE) from Microsoft for its COM programming model first released in 1991. VB provides the way to create graphical interface with the help of programming language.

**4.1 Visual Basic Development Overview**

All VB developers follow the following steps as they prepare programs destined for the user's desktop. Each of these steps described in detail in the following list:

- Building & Designing the user interface.
- Events that respond to the written code.
- When needed create and call other procedures.
- Test & debug.
- Runtime version conversion.
- Distributable set of files pre.

**SYSTEM DESIGN**



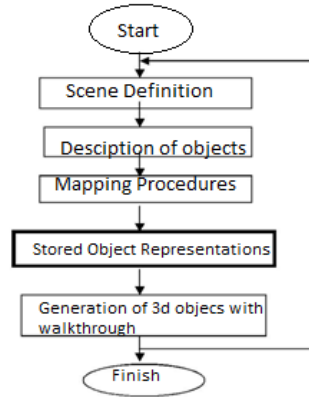
INITIALLY, USING THE DESIGN TOOLKIT, USER DESIGNS THE ENVIRONMENT OF HIS CHOICE BY SPECIFYING THE

FIG 4. 3D Output Generation

characteristics, relative locations of various objects that are of his interest in the room. The 3D Modeling Software makes use of this information to generate

the 3D image that is superimposed.

**5.1 SYSTEM FLOWCHART**



**VI. CONCLUSION**

The Literature survey conducted in order to gather information for this paper has helped us gain an insight into the challenges faced by the developers for successful implementation of any project in a new and developing field. Due to various features of Virtual Reality over other Graphics, this paper would have an impact importance in the field of Architecture and Interior Designing. This paper is and try to develop a platform for designers to explore the tremendous world of virtual reality and provide the clients with realistic view of the real world.

**ACKNOWLEDGMENT**

We take this opportunity to thank all the people who have helped us in completing our project, without whom the completion of this project would not have been possible.

First of all we would like to thank our esteemed guide Prof. Anup Raut for their guidance at all the times that they provided their support and guidance without complains at any time of the day and also for the bright ideas and inputs that they gave to the project. We would also like to express our gratitude to all friends and wellwishers for co-operating with us and we acknowledge sincere thanks towards our institute Trinity College of Engineering, University of Pune

**REFERENCES**

[1] O.Tomi Korpipää, Koichi Minami, Tomohiro Kuroda, Yoshitsugu Manabe, Kunihiro Chihara Shared Virtual Reality Interior Design System. IEEE 2012  
 [2] Azuma, R. (1997), A survey of

- Augmented Reality, Presence.
- [3] Billinghamurst, M. and Kato, H. and Proupyrev, I. (2001), The MagicBook-Moving Seamlessly between Reality and Virtual, IEEE Computer Graphics and Application, Vol.21, No.3,
  - [4] Billinghamurst, M. and Proupyrev, I. and Kato, H. and May, R. (2000), Mixing Realities in Shared Space: An Augmented Reality Interface for Collaborative Computer, Proceeding of ICME 2000.
  - [5] Dias, J. M.S. and Santos, P. and Nande, P. (2003), InYour Hang Computing: Tangible Interfaces for Mixed Reality, Proceeding of 2nd IEEE International Augmented Reality Toolkit Workshop, WasedaUniv, Tokyo, Japan.
  - [6]. Kensek K. and Noble, D. and Schiler, M. and Tripathi, A. (2000), Augmented Reality: An application for architecture, Proceeding of 8th International Conference on Computing in Civil and Building Engineering, ASCE, Stanford, CA, 294-301.
  - [7]. Milgram, P. and Takemura, H. and Utsumi, A. and Kishimo, F. (1994), Augmented Reality: A class of displays on the reality-virtual continuum, Proceeding of Telem manipulator and Telepresenc Technologies: 2351-34, Retrieve 2007-03-15.
  - [8]. Pasman, W. and Woodward, C. (2003), Implementation of an Augmented Reality System on a PDA, Symposium of Mixed and Augmented Reality, ISAR 2003, Tokyo, Japan.