Virtual Reality Real Estate

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***Abstract*—This project presents a particular VR implementation done for a real estate developer. This implementation focuses on increasing immersion and is most suitable for properties that are to be built. It is the latest development of the VR4RE (Virtual Reality for Real Estate) project, which aims at saving time and money for both real estate sellers and buyers by employing modern technologies. VR4RE is one of the innovative projects developed by Bluemind Software. We can see a drastic change is the usage of the virtual reality after introduction of webvr.**

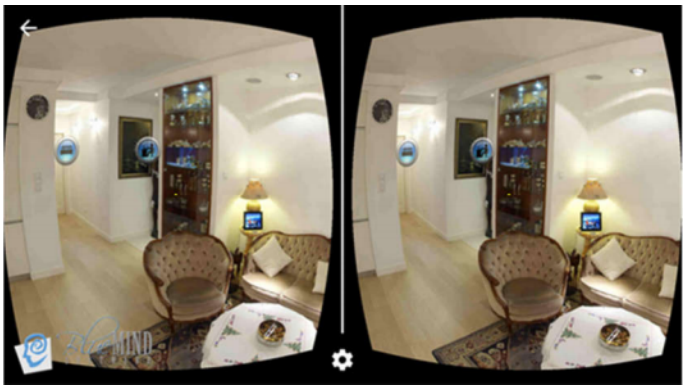
***Index Terms*—Virtual Reality, VR4RE**

I. Introduction

The basic need of the hour is a framework which will allow the users to choose the real estate houses just one click away from their mobile phones. This problem is very important and crucial because of the lagre number of real estate organizations and their less availability to the customers. This framework will be able to revolutionize the buying of real estate flats and houses. This problem is very challenging because we need to make this application available to everyone on their mobile and also make the houses' look more similar to the real houses. The one solution possible could be using the webvr and making the site available to everyone across the globe. The basic idea of the project is to use webVR in a way which will be beneficial for the process of the buying real estate houses. This idea of ours in much more good than that of using an android application because web application is much versatile in nature and will be available at any time and feasible also.

II. Literature Survey

The starting idea for VR4RE emerged during discussions with a real estate developer in 2008. After having seen 3DCar, the real estate developer asked if the same technology could be used to present real estate. After working on a simple prototype, the 2008 real estate crisis, along with the fact that the tools to develop solutions were much more expensive, interfered with creating a finished solution. The first good looking prototype came out during a Startup Weekend event in Brasov, Romania, in 2013.
It was an apartment visualization application used of real time 3D model rendering for PC. The application included interactive doors. The first finished application was developed to run in a webpage (in Chrome and, with the help of add-ons, also in other browsers).



In 2015, some started experimenting with creating mobile apps for smartphones used together with Google Cardboard devices. The results were good when using a better Google Cardboard, such as the Dives one. They started experimenting with these simpler devices because their existing HMDs (head-mounted displays) were great but just too expensive for possible users. Involving Cardboard devices (including Gear VR users) helped them reach many more people because of its lower hardware cost.

III. Problem Statement

Problem of uncertainty while looking for a dream house is solved using virtual reality based web application.

A. Objectives

1) To make interface for Virtual Reality Real Estate application.

2) Add different models of houses for the user to visualize them and choose the best out of them.

3) User should be able to see the model clearly, interact with it and use it to the fullest.

IV. Case Study

The most recent implementation consists of creating a VR application, in which visitors can visit a one-bedroom apartment. Its layout can be seen in figure 2. It consists of a hallway from which a living room, a bedroom, a kitchen and a bathroom can be entered. Both the living room and the bedroom have balconies.

The apartment had to be an accurate replica of a real one found in an in-construction block of flats owned by a well-known real estate developer located in Brasov, Romania. For this to happen, the first step was to find out the date related to the apartment (footprint, sizes, layout etc.). It was decided that there was need to involve the architect who designs the apartments for the real estate developer. This was done with the hope that we can get not only accurate data, but also a clear floorplan and maybe even 3D models. The ideal envisioned workflow was:

1) get 3D models from the architect;
2) import 3D models into the VR application development environment;
3) set up lighting;
4) integrate VR;
5) build test versions and test/fix;
6) build the final application

V. Methodology

Algorithm

1. Just used webVR and used some models to make the house.
2. Used so basic tool to host it on the web.

VI. Results and Analysis

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Effective/Efficiency analysis.

TABLE I
User feedback using Likert scale analysis

User feedback	1	2	3	4	5
Aesthetically appealing					5
Easy to use					5
Versatile		2			
User satisfaction		2			
Used on all devices					5
Flexibility			3		
Interactivity		2			
User Friendly	1				

VII. Conclusion

This project presented a summary of the evolution of the VR4RE research direction and its latest developments. This paper shows that efforts are being and will keep being directed towards both of the research directions and market segments identified. It focused on 3D VR used to achieve a much more complete realistic view of the houses. The solution is ideal for properties to be built.

Individual contribution

Akshay: Made the first model and first page.
Yogesh: Made the second model.
Tarun: Made the third model.

Project Screenshots

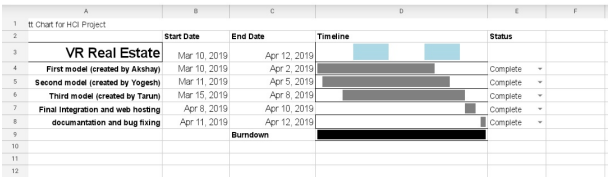

Fig. 1. Gantt Chart

Fig. 2. Ceiling Fan

Fig. 3. Garage

Fig. 4. Bathroom

Fig. 5. Fire place

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