

# “Furniture Layout Application using Augmented Reality”

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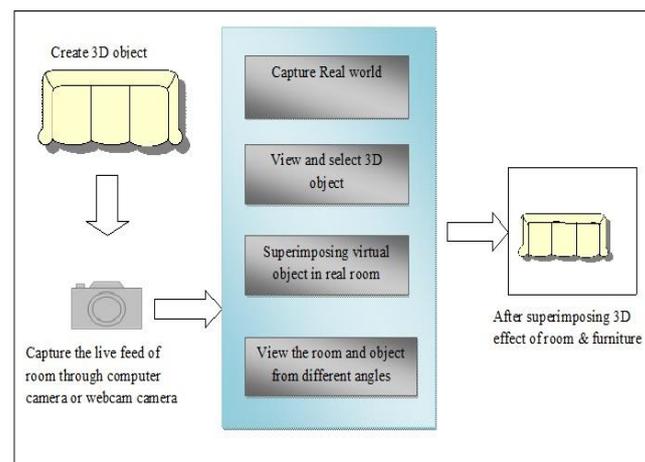
**Abstract:** Information technology currently supports the development of human interaction with virtual environment. This development will continue in developing in the form of Human Computer Interaction (HCI). Augmented Reality is a field of computer research which deals with the combination of reality with computer generated data. The main purpose of this project is to develop a windows application for trying different furniture items in a virtual way. This application will eliminate the need of physically visiting the furniture store which is very time consuming activity. This research is using photo-realistic 3D models to rendering used in computer graphics. Rendering of the basis for colour and shading in order to make it appear solid and 3D. These 3D furniture models are superimposed on to the live feed of real space taken from the camera. After imposing the model it will appear as, it is actually placed into the real world. Using this application one can choose from the different set of furniture and try it on their space.

**Keywords:** HCI- Human Computer Interaction, 3D -Three dimensional, AR- Augmented Reality.

## I. INTRODUCTION

The main purpose of this project is to develop an application for having a look and feel of different furniture items in without the usual means which is a very time consuming activity. Besides, it might be easier to use this technique in Online Shopping System as an option for users to try out the furniture items in their rooms, offices, shops. It will help the users to visualize the room or space where they want to place the furniture items. And also get the exact look of the room or space after placing furniture in it. Users can try out multiple combinations virtually, without physical movement of furniture items. The motivation here is to increase the time efficiency and improve the accessibility of furniture try-on by creating furniture layout using augmented reality application.

### System Architecture



## II. LITERATURE SURVEY

[1]“Hirokazu Kato and Mark Billinghurst”

An augmented reality conferencing system which uses the overlay of virtual images on the real world. Remote collaborators are represented on Virtual Monitors which can be freely positioned about a user in space

[2]“Dieter Koller , Gudrun Klinker , Eric Rose, David Breen, Ross Whitaker, and Mihran Tuceryan”

Augmented reality deals with the problem of dynamically augmenting or enhancing (images or live video of) the real world with computer generated data (e.g., graphics of virtual objects).



[3]“Paul Merrell, EricSchkufza, Zeyang Li, Maneesh Agrawala, Vladlen Koltun”

Presenting an interactive furniture layout system that assists users by suggesting furniture arrangements that are based on interior design guidelines. This system incorporates the layout guidelines as terms in a density function and generates layout suggestions by rapidly sampling the density function using a hardware-accelerated Monte Carlo sampler.

[4] “Mark Billinghurst, Hirokazu Kato, and Seiko Myojin”

Augmented Reality (AR) research has been conducted for several decades, although until recently most AR applications had simple interaction methods using traditional input devices[5] “Michael Calonder, Vincent Lepetit, Mustafa Özuysal, Tomasz Trzcinski, Christoph Strecha, and Pascal Fua” Binary descriptors are becoming increasingly popular as a means to compare feature points very fast and while requiring comparatively small amounts of memory.

### III. COMPARISON

Sr. no.	Paper Title	Author	Year	Conclusion
1	Furniture Layout AR Application Using Floor Plans Based On Planner Object Tracking	Taiki Fuji, Yasue Mitsukura, Toshio Moriya	2015	This system will help buyer who want to buy furniture in real environment. Customer will used it to determine how to set up furniture in house.
2	Marker Tracking & HMD Calibration for a video-based AR Conferencing System	Hirokazu Kato, Mark Billinghurst	2014	This system will help to detect marker and head mounted display calibration.
3	BRIEF:Computing a local binary decriptor very fast	Michael Calonder, Vincent Lepetit, Pascal Fua	2014	This system will help for small number of intensity difference test to represent an image patch as binary sring.
4	Real Time Vision Based Camera Tracking For AR Application	Dieter Koller, Gudion Klinker	2015	This system will help to alignment of real and virtual coordinate frames for overlay. Capturing 3D motion of camera.

### III. FUTURE SCOPE

#### 1. Add Furniture Model

In this module actually user will create 3D objects of furniture. 1st of all user has to decide the furniture which he has impose into the room, for that, he has to capture furniture’s pictures from all sides to create that furniture’s 3D object.

#### 2. View Model List

In this module user can view list of all 3D objects which he has created in previous module and select one of them which we want to place in the virtual room so user can see how that furniture will appear in the room.

#### 3. View Camera

View camera module means by which side he wants to see the virtual room, it could be that he wants to see room from above or from side or from bottom

### IV. CONCLUSION

This system will help buyer who want to buy furniture in real environment. Customer will used it to determine how to setup furniture in house.

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