MagicHouzz

(Project Proposal)

Project Code

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Table of Contents

Abstract:

Augmented reality is one of the fastest growing technologies out there, and one that regular folks are eager to adapt. That's because with just our smart phone, we can re-imagine and re-design our space, so you can see what new paint, decor and furniture will look like in your home before you buy it.

This project provide an attractive and interactive interior design application using Augmented reality, virtual information techniques are required in architectural field. Nowadays, people are busy with their work thus limiting their time to go to various stores to buy furniture for their everyday use. There is difficulty to fulfill the customers contentment of decorate their room without imaginary view of how the place would actually appear. A printed furniture catalogue is paper based containing textual information and images which does not provide any interaction for the user. We intend to use marker based AR for implementing a new design approach for interior design. This AR environment will allow the user to select from a range of furniture and then display the virtual furniture selected on the real environment. The user can also modify the virtual furniture in real-time on the screen allowing the user to have an interactive experience with the furniture in a real-world environment. This will provide a better view of the furniture placement and simplify the process of interior designing for users to save their time and effort. AR considered as new design approach for interior design. In AR environment, virtual furniture can be displayed and modified in real time on screen, allowing the user to have an interactive experience with virtual furniture in real world environment.

Background and justification:

Background:

Visualizing how a particular table or chair will look in a room before it is decorated is a difficult challenge for anyone. Hence, Augmented Reality (AR) technology has been proposed for interior design applications by few previous authors. Tracking markers are placed on the floors or walls to define the scale and coordinate system of the room. Next, the user selects virtual furniture on the screen and places it in the design space. In the AR scene, the 3D virtual furniture is integrated into areal environment and can be arranged along sidereal furniture. Experiments are implemented using basic home computer equipment, including a PC, HMD (or web camera), and printer. As a result, it is hoped that the proposed system will allow a broad range of users. The user can interact with virtual furniture using a Tangible Augmented Reality in real time, and change the color, style, or covering of furniture in a real environment. Therefore, this allows complex and varied designs to be explored and visualized, making AR technology for interior design accessible to both professionals and amateurs.

Justification:

AR technology can become a new animated simulation tool for interior design , allowing the user to see a mixed AR scene through a web camera, video display ,or PDA. It is also anticipated that the interactive potential can be increased according to user's needs. Augmented reality is one of the fastest growing technologies out there, and one that regular folks are eager to adapt. That's

because with just our smart phone, we can re-imagine and re-design our space, so you can see what new paint, decor and furniture will look like in your home before you buy it. AR support auxiliary information to people when decorating and selecting furniture, help user feel the placement of furniture in the room in advance before putting them in.

Project Methodology:

- **Android based development:**

Augmented Reality (AR) is a new technology that involves the overlay of computer graphics on the real world. As a result, the user can see the real world augmented with virtual objects and can interact with them.

Application works as follows:

1. A video of real World is captured by camera and send to application.
2. Application searches through each video frame
3. If features detected ,position of camera is decided with respect to marker
4. The furniture model is overlaid on top of video of real world ,linked to marker.
5. The final arrangement is shown back in the camera feed. the user sees objects overlaid on real scene

Real time video feed is capture and given to camera. the markers are selected by user and objects are linked to it. The objects can moved rotated and changed by user in real time and finally placed at appropriate position.

Project Scope:

The scope of this project is that Technology opens up many new research fields in engineering and architecture. Augmented reality technique has been used in the field of computer vision technology, with its different user experience, slowly and deeply changing people life which include many different field.

1. **User**

- Everybody that has mobile gadget to use the augmented reality application to design their room or house with virtual 3D objects.

2. **Furnishing companies**

- Implement augmented reality application with virtual 3D representation furniture and furnishings for their customer.

3. **Content application**

- The application is an interactive AR application. The model focus is the furniture of the living room. So, the 3D models that develop will be the furniture of the living room. In order to use this

application, user needs to have camera on their device. After that, user just needs to install the application, turn on the application and point the camera to the living room. User can take a picture of the design space and set the image as tracking pattern. Then, user can choose the furniture from the list and the sofa‟s image will be overlaid on the room. The whole process can then be reset by reactivating the camera. Last, a screenshot can be saved for further refer.

Interaction technique

Three types of gestures have been provided in this application such as drag, pinch and rotation gesture. User can drag, rotate, enlarge and minimize the furniture model in order to fit in their house. At the same time, user can view different dimension of the 3D virtual object such as the front view, side view and back view of the model by rotate the model with fingers.

High Level Project Plan:

- **Proposed tool and platform:**

The software requirement includes android application in mobile phone**.**And there is no hardware requirement.

References:

1. Wang, Xiangyu, et al. "Augmented Reality in built environment: Classification and implications for future research." Automation in

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4.Tang, Arthur, et al. "Comparative effectiveness of augmented reality in object assembly." Proceedings of the SIGCHI conference on Human

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Chapter 2

Feasibility Study

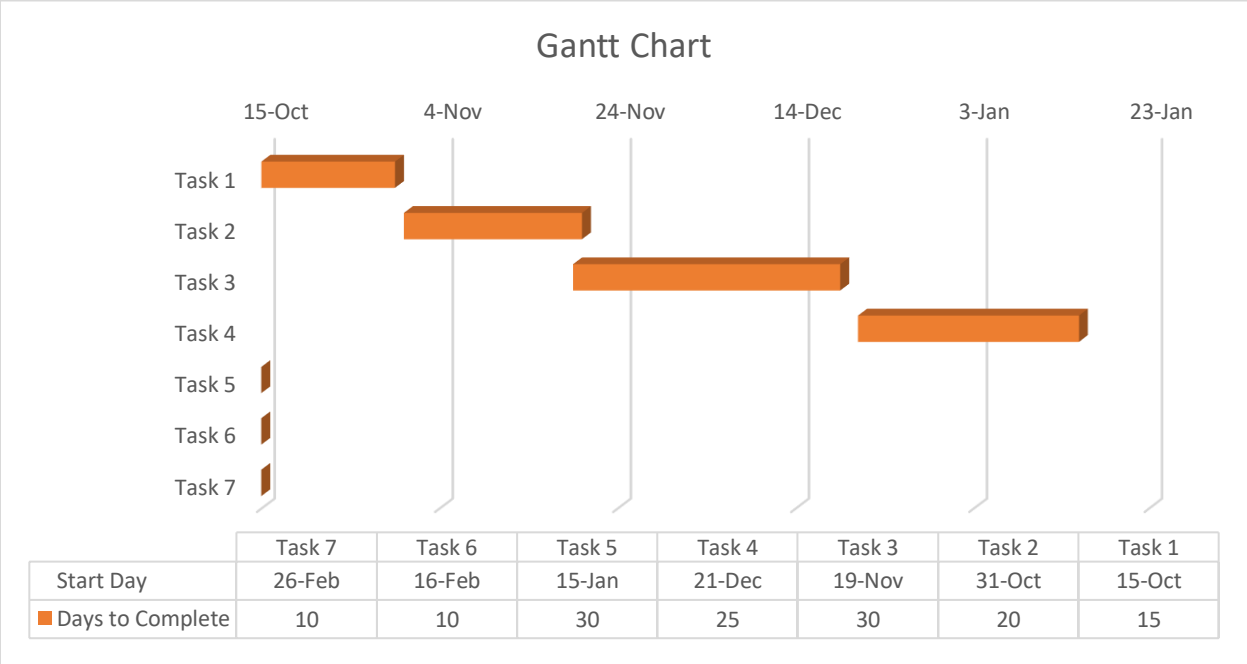
Technical Feasibility:

The technical feasibility of this application involves the language which is being used to develop the project. The project entitled “MagicHouzz” based on Augmented Reality and Android that is for interior designusing technology.We will develop this application in java language. The software requirement includes android application in mobile phone**.** And there is no hardware requirement. The application is an interactive AR application. The model focus is the furniture of the living room. So, the 3D models that develop will be the furniture of the living room.

Economic Feasibility:

Cost mainly depends on **App** features. Basic components of AR system are display, camera for graphic captures, and installed application software plus hardware like camera ,phones, PDAs,laptops and wearable computer systems. Our estimated budget is 10000. It may be increase.

Time Feasibility:



	Task 7	Task 6	Task 5	Task 4	Task 3	Task 2	Task 1
Start Day	26-Feb	16-Feb	15-Jan	21-Dec	19-Nov	31-Oct	15-Oct
Days to Complete	10	10	30	25	30	20	15

Legal Feasibility:

Our project follow the rules and regulation of government. This project is totally under the law of Pakistan. We are not doing such type of activities which violate the laws of Pakistan.