



International Journal of Advanced Research in Education and TechnologY (IJARETY)

Volume 12, Issue 3, May-June 2025

Impact Factor: 8.152



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



Modelling and Layout of OFG+1 DUPLEX using AutoCAD and 3DsMAX

Dr.Raghuveer Narsing, A. Mounika, A. Mounika Prajwala, B. Sandeep, Kuol Billthol

Assistant Professor, Department of Civil Engineering, Guru Nanak Institutions Technical Campus, Ibrahimpatnam,
Telangana, India^a

U.G Student, Department of Civil Engineering, Guru Nanak Institutions Technical Campus Ibrahimpatnam,
Telangana, India^b

ABSTRACT: In order to compete in the ever growing competent market it is very important for architecture to save time. As a sequel to this an attempt is made to 2D and 3D design a residential building by using a software package 3DS MAX. For interior and exterior building one has to consider all the The present project deals with the 3D of a building G+1.The dead load &live loads are applied and the design for beams, columns, slab is obtained using 3DSMax with its new features surpassed its predecessors, and cospotators with its data sharing capabilities with other major software like AutoCAD. We conclude that 3DS Max is a very powerful tool which can save much time and is very realistic view of interior and exterior design of the project is easy to deal the customers by using this software. Thus it is concluded that STAAD.Pro package is suitable for the design of a residential building (G+1).

KEYWORDS: 3DS Max, AutoCAD

I. INTRODUCTION

Autodesk 3ds Max, 3D Max, Is A Professional 3D Computer Graphics Program For Making 3D Models, And Images. It Is Developed And Produced By Autodesk Media And Entertainment.[2] It Has Modeling Capabilities And A Flexible Plugin Architecture And Must Be Used On The Microsoft Windows Platform. It Is Frequently Used By Studios, And Architectural Visualization Studios. It Is Also Used For Movie Effects And Movie Pre-Visualization. 3ds Max Features Shaders (Such As Ambient Occlusion And Subsurface Scattering), Dynamic Simulation, Particle Systems, Radiosity, Normal Map Creation And Rendering, Global Illumination, A Customizable User Interface, And Its Own Scripting Language.

II. LITERATURE REVIEW

The literature review on the modeling and layout of a G+1 duplex house using AutoCAD and 3ds Max software highlights the synergy of these tools in architectural design. AutoCAD provides accurate 2D drafting for initial floor plans, elevations, and structural layouts, while 3ds Max enables realistic 3D modeling, visualization, and photorealistic rendering, enhancing design communication and client presentations. The combination allows for a comprehensive design process, from conceptual planning to final visualization, ensuring both technical accuracy and visual appeal.

III. METHODOLOGY

The process of modeling and laying out a G+1 duplex using AutoCAD and 3ds Max involves a workflow where 2D architectural drawings are created in AutoCAD, followed by 3D modeling and rendering in 3ds Max. This approach ensures both technical accuracy and visual representation of the design. Detailed Methodology:

1. 2D Drafting in AutoCAD:

Planning and Layout: The initial stage involves creating detailed 2D floor plans, elevations, and sections in AutoCAD.

Structural and Geometric Accuracy: AutoCAD ensures precise representation of dimensions, wall thicknesses, openings, and other structural details.

Documentation: Clear and accurate 2D drawings serve as the basis for 3D modeling and communication with stakeholders.

2. 3D Modeling in 3ds Max:

Importing 2D Drawings: The 2D designs from AutoCAD are imported into 3ds Max, creating the foundation for the 3D model.

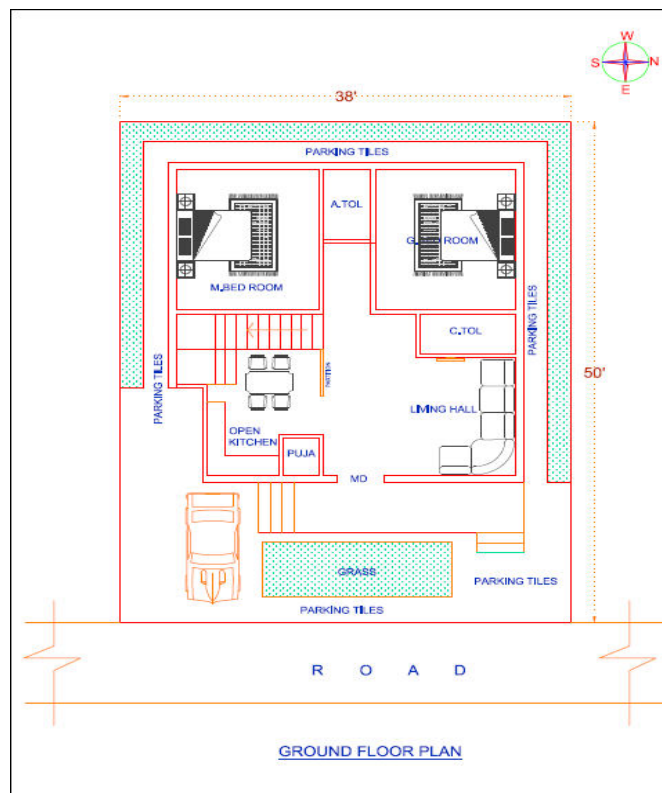
Building the 3D Structure: 3ds Max's modeling tools are used to create the 3D structure, including walls, floors, ceilings, roofs, and other architectural elements.

Texturing and Materials: Realistic textures and materials are applied to the model, enhancing its visual appeal and conveying the intended design aesthetic.

Lighting and Rendering: 3ds Max allows for the creation of realistic lighting conditions and rendering of the model to produce high-quality visualizations.

Virtual Walkthrough: The final 3D model can be used to create virtual walkthroughs of the G+1 duplex, allowing clients and stakeholders to experience the design in a realistic way.

Gathering client requirements, site analysis, and initial layout sketching are the first steps in designing a house with AutoCAD and 3ds Max. Create 2D floor designs for the ground floor using AutoCAD, making sure that all sections and elevations meet to local construction rules and specifications for dimensions and operation. After everything is finished, Import the designs to 3ds Max in order to create walls, floors, and roofs can be extruded and architectural features like stairs and home furnishings can be added to the 3D model. Use V-Ray to apply realistic materials and textures, adjust lighting and surroundings, and generate excellent graphics. Present the design for remarks and finalize 2D drawings and 3D visuals for construction and presentation.



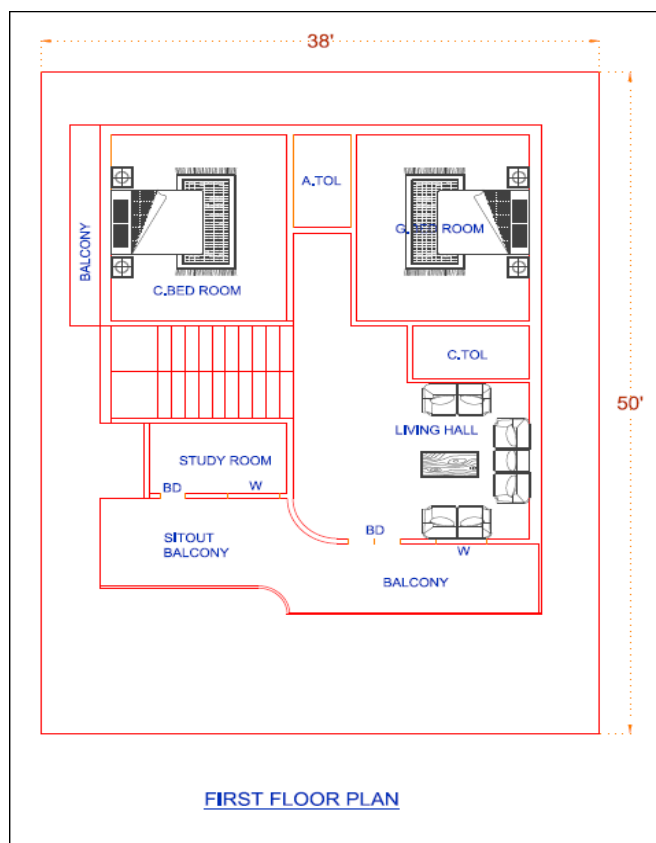
Analyzing site specifics, architectural preferences, and any other design guidelines that affect the finished product are also included in this phase.

AutoCAD, which is perfect for producing accurate 2D architecture drawings, is used to draft the layout in the following stage. Prior to creating complete floor plans for the ground and first levels, the procedure entails establishing the proper units and scales.

These blueprints make sure every component is precisely dimensioned and include wall, door, window, staircase, and room layouts. To improve clarity, annotations like labels and measurements are added, and layers are utilized to arrange the drawing's various elements. For usage in the 3D modelling stage, the finished layout is subsequently saved as a.DWG file.

The 2D layout is imported into 3ds Max for 3D modelling after it is complete. The proper scale and orientation are carefully maintained while importing the DWG file into the software. Layer-based organization of imported data makes processing easier. Making walls and defining structural components like floors, ceilings, are the next steps in establishing the farmhouse house base geometry.

Boolean operations are used to incorporate door and window openings, and architectural elements like columns and modelling are added to improve the farmhouse appearance.



Texturing and the application of materials are done after the 3D structure has been model. Using 3ds Max's Material Editor, realistic materials are applied to different villa components, and UV mapping is applied to ensure textures appear seamless. Because it adds depth and realism, lighting is a crucial component of this stage. Both artificial and natural lighting configurations are used, and sophisticated renderers like V-Ray or Arnold are frequently used to produce photorealistic results. Rendering and visualization come next after the model and textures are ready. Key views of the farmhouse exterior and inside are captured by strategically placed cameras. The produced photos clearly display the farmhouse intricate design, and the render parameters are adjusted to guarantee high-quality output. To give a live view of the area, walkthroughs or animations can also be made if necessary Software such as Photoshop is used to post-process output photos. To improve the visual quality, brightness, contrast, and colour balance must be adjusted. Other effects like vegetation, sky, and ambient elements may be added to make the scene more lifelike.

Lastly, the results are checked against the original requirements. After rendered images and Walkthroughs are reviewed and shared with stakeholders for advice. To make sure the finished design reflects the client's vision, any necessary changes are made in response to their feedback. High-resolution photos, animations, and 3D model files that are prepared for presentation or additional work are usually included in the deliverables. This thorough process ensures a precise and eye-catching representation of the G+1 Duplex House design.



FRONT ELEVATION

IV. CONCLUSION

The studies discussed highlight advancements in various fields:

1. **Building Design:** S. Harish and L. Ramaprasad Reddy (2017) and R.D. Deshpande et al. (2017) focus on optimized structural designs for buildings, considering foundation, columns, and beams, with design support from software like AutoCAD.
2. **Skyscraper Design:** Al-Kodmay et al.(2016) explore efficient and aesthetic structural systems like exterior bracing and diagrid, which reduce material use and improve performance.
3. **Guardrail Design:** Tangzhi Liu et al.(2024) propose an optimized double-layer W-beam guardrail for better vehicle collision protection.
4. **Fashion Innovation:** Mingyan Zhang et al. (2024) apply fractal patterns in fashion design using CAGD, enhancing creativity and efficiency.
5. **3D Printing and Microfluidics:** Studies by David Ricart et al. (2024) and others on 3D-printed microfluidic systems improve drug detection, VOC analysis, and cancer treatment, offering portable, cost-effective, and precise solutions. In summary, these studies contribute to optimizing design, materials, and technologies across architecture, transportation, fashion, and healthcare, driving efficiency and innovation

REFERENCES

Journals

1. Fan, M., R. Hu, Z. H. Feng, X. X. Zhang, and Q. Hao, "Advance in 2D-EBG structures research," *The Journal of Infrared and Millimeter Waves*, 2003, 26(2): 301–320. doi: 10.1037/0033-295X.113.3.672
2. Singh, K. and Robin, R., "A linear- quadratic game approach to estimation and smoothing", In *American Control Conference*, New York. June 20 – 25, 2008, pp. 2818–2822.

Dissertations and Thesis

3. Mack S., "Desperate Optimism" M.S. Thesis, University of Calgary, Canada, 2000.

Books

4. Constantine A. Balanis, *Antenna Theory Analysis and Design*, 3rdEd., John Wiley and Sons, 2005.

Websites with URL

5. First ever black hole image released. BBC News. <https://www.bbc.com/news/science-environment-47873592>.

International Journal of Advanced Research in Education and Technology

ISSN: 2394-2975

Impact Factor: 8.152