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Modelling and Layout of Farm House using AutoCAD and 3Ds Max Software

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ABSTRACT: The Design and Modelling of Farm House using 3ds Max for 3D Modelling,Rendering and AutoCAD for drafting. To ensure representation of the Farm House design, AutoCAD is first utilized to develop full floor plans, elevations, and structural layouts. The 2D drawings are then transformed into realistic 3D models using 3ds Max, which adds textures, lighting, and materials to the visualization to create an aesthetic representation of the interior and exterior designs. The technical drawing capabilities of AutoCAD and the rendering capability of 3ds Max are combined to create realistic presentations and efficient design development, which aids in effectively communicating the design vision to clients

KEYWORDS: 2D drawings, 3D visualization, Architectural works

I. INTRODUCTION

The design of a farmhouse using AutoCAD and 3ds Max combines precise architectural planning with realistic 3D visualization, allowing for the creation of a functional and aesthetically pleasing rural home. AutoCAD is used for the drafting of floor plans, elevations, and detailed construction drawings, ensuring accuracy in measurements, material specifications, and spatial arrangements. It provides the foundation for the layout and structure of the farmhouse, making sure that all elements adhere to design standards and local building codes.

Once the 2D design is finalized, 3ds Max is employed for 3D modeling and rendering. This software allows designers to transform the flat AutoCAD drawings into a detailed, lifelike representation of the farmhouse, including realistic textures, lighting, and landscaping. With 3ds Max, the farmhouse design can be visualized from different angles, helping clients and architects assess the aesthetic and functional aspects of the project before construction begins. The integration of both tools provides a comprehensive approach to farmhouse design, ensuring that the final result is both architecturally sound and visually compelling.

II. LITERATURE SURVEY

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Workflow in Virtual Reality Tool Development for AEC Industry by ann, **Pratama and Dossick, Mutis, I., HartmT**. [3] (2019) investigates how Architecture, Engineering, and Construction (AEC) firms integrate virtual reality (VR) technology into their workflows, particularly during design and pre-construction phases. The study identifies the main use of VR in AEC as building walkthroughs, supported by a variety of software tools ranging from quick, off-the-shelf solutions to in-house developments tailored to specific needs. Through semi-structured interviews, the authors analyze the challenges and workflows of VR implementation, highlighting how modern VR systems enhance visualization while requiring customized solutions for features like model annotation and multi-user environments.

Feasibility of augmented reality technology for communication in the construction industry. Advanced Engineering Informatics**. Harikrishnan, A, Abdallah, AS, Ayer, SK, El Asmar, M and Tang**, P 2021[4]: This research explores the use of virtual reality (VR) technology to enhance architectural education, specifically in building construction

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courses at Jordan University of Science and Technology (JUST), which traditionally rely on teacher-centered methods. The study developed BC/VR software that uses a 4D model (3D model with time) to simulate construction phases, providing immersive and non-immersive experiences for students. Through a structured questionnaire, the study evaluates the effectiveness of this VR tool in providing building construction information, increasing student enjoyment, and integrating with other courses. Results indicate that VR technology significantly outperforms traditional methods in all areas. The research also highlights VR's evolution and its potential to transform educational approaches by offering more interactive and engaging learning experiences

Kelly L. Murdock is the author of "Autodesk 3ds Max 2021 Complete Reference Guide." This book is highly regarded for its comprehensive coverage of 3ds Max, making it suitable for both beginners and experienced users. It includes over 150 tutorials and step-by-step instructions on various topics, such as crowd simulation, particle systems, and MAXScript1.

The Complete Reference Guide is the ultimate book on 3ds Max, and like Autodesk's 3D animation software, it just gets better and better with each release. Whether you're new to 3ds Max or an experienced user, you'll find everything you need in this complete resource. The book kicks off with a getting started section, so beginners can jump in and begin working with 3ds Max right away. Experienced 3ds Max users will appreciate advanced coverage of features like crowd simulation, particle systems, radiosity, MAXScript and more. Over 150 tutorials – complete with before and after files – help users at all levels build real world skills.

Pradeep Mamgain is the author of "Autodesk 3ds Max 2021: Modeling Essentials, 3rd Edition." This book provides a structured approach to learning 3D modeling with 3ds Max, starting with the basics and progressing to more advanced techniques. Pradeep Mamgain is a self-taught digital artist, instructor, and consultant with a strong background in computer graphics. he Autodesk 3ds Max 2022 Fundamentals provides a thorough introduction to the Autodesk 3ds Max 2022 software that will help new users make the most of this sophisticated application, as well as broaden the horizons of existing, self-taught users.The guide instructs you on how to effectively use the software interface and navigate through the scenes. It explores the creation of 3D objects and how to bring in objects from other software such as Autodesk Revit, AutoCAD, and Civil 3D. Additionally, it teaches you to prepare the scenes for renderings by adding materials, lights, and cameras. Finally, the guide covers an understanding of various renderers included with the software, as well as image creation and animation techniques.The practices in this guide are primarily geared towards real-world tasks encountered by users of the Autodesk 3ds Max software in the Architecture, Interior Design, and Civil Engineering industries. Advanced topics such as character modeling, character animation, and rigging are not covered in this guide.

Rick Bartholomew is an interior designer with over forty years of practicum experience in residential, commercial, and furniture design. He has a Bachelor of Architecture and Master of Science (Interior Design) degrees from Oklahoma State University, of which, he formerly served as a professor teaching in the Interior Design program in the Department of Design, Housing, and Merchandising. Professor Bartholomew was tenured at OSU during his seventeen years of teaching experience. Rick currently conducts hand sketching and rendering workshops for schools of interior and architectural design, and one-on-one workshops for professional design firms.Rick's area of specialization is furniture design and presentation techniques. He has designed furniture pieces for exhibition and gallery showrooms in Oklahoma, Arizona, New Mexico, New York, Houston, and Chicago in addition to ownership of a copyrighted furniture collection inspired by Native American history and culture. Rick was a design consultant for a national retail fixture and custom furnishings manufacturer and his current work includes working with design and furniture manufacturing firms in developing furnishings and furniture components, as well as conducting sketching and colour rendering workshops across the country.Rick's passion, in addition to furnishings design, is dedicated to teaching students and practitioners the art and necessity of handsketching techniques and colour marker and watercolour rendering illustrations. He also strives to foster the importance of quality visual presentation composition and information graphics. His is personally inspired by Native American history and culture, the work of Frank Lloyd Wright, Georgia O'Keeffe, Nicolai Fechin, Art Deco, and contemporary design.

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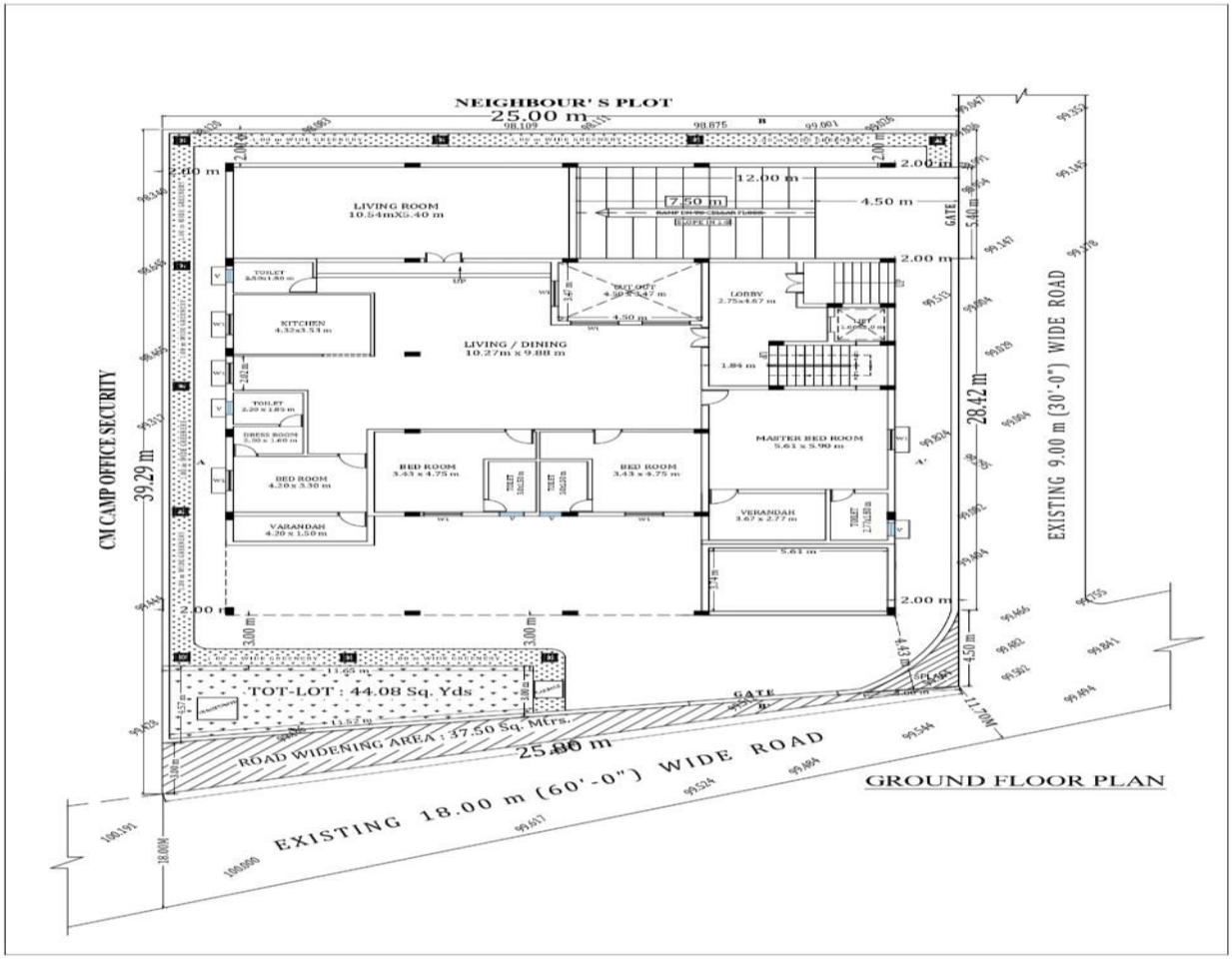
III. METHODOLOGY

Gathering client requirements, site analysis, and initial layout sketching are the first steps in designing farmhouse 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.

IV. EXPERIMENTAL RESULTS



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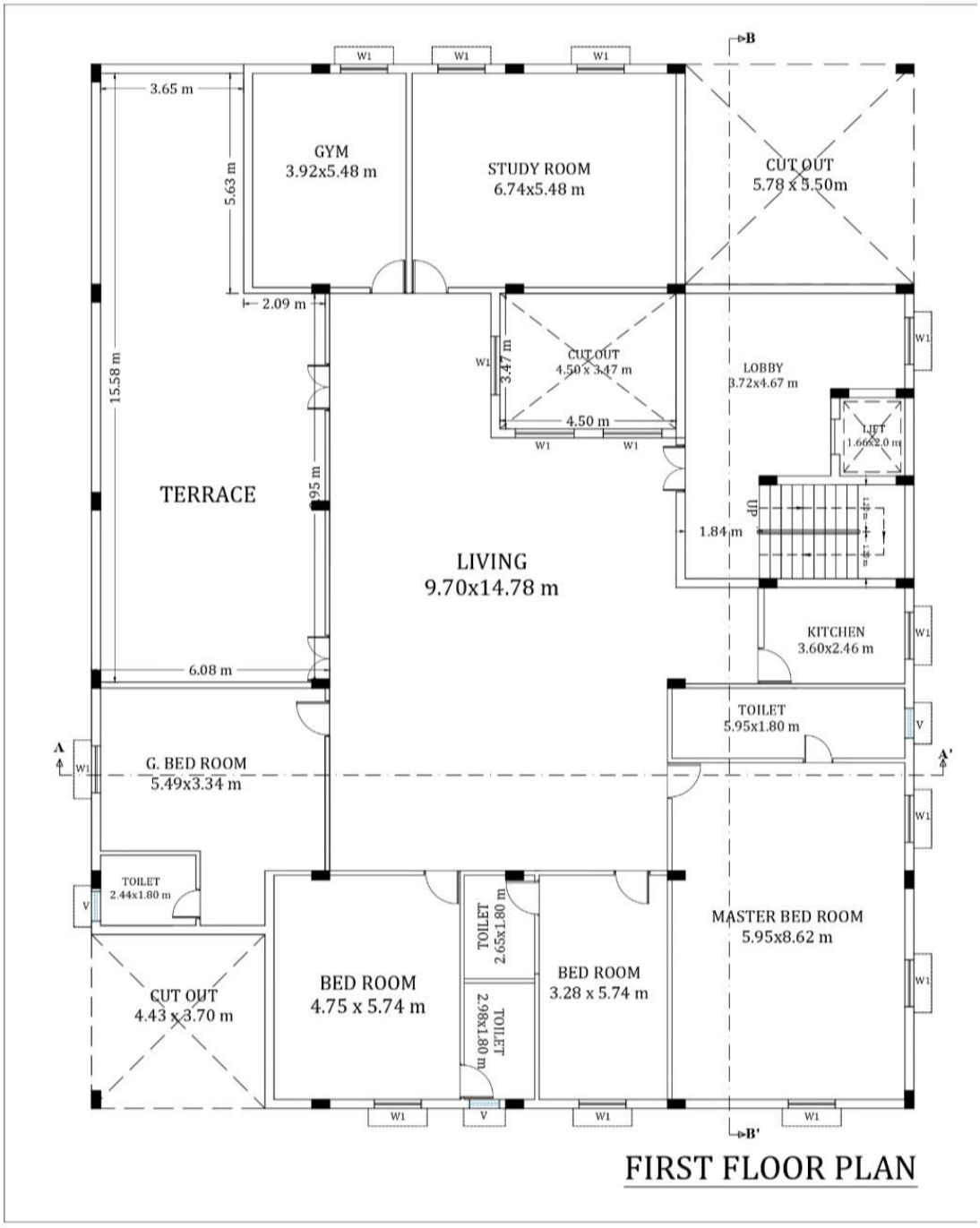

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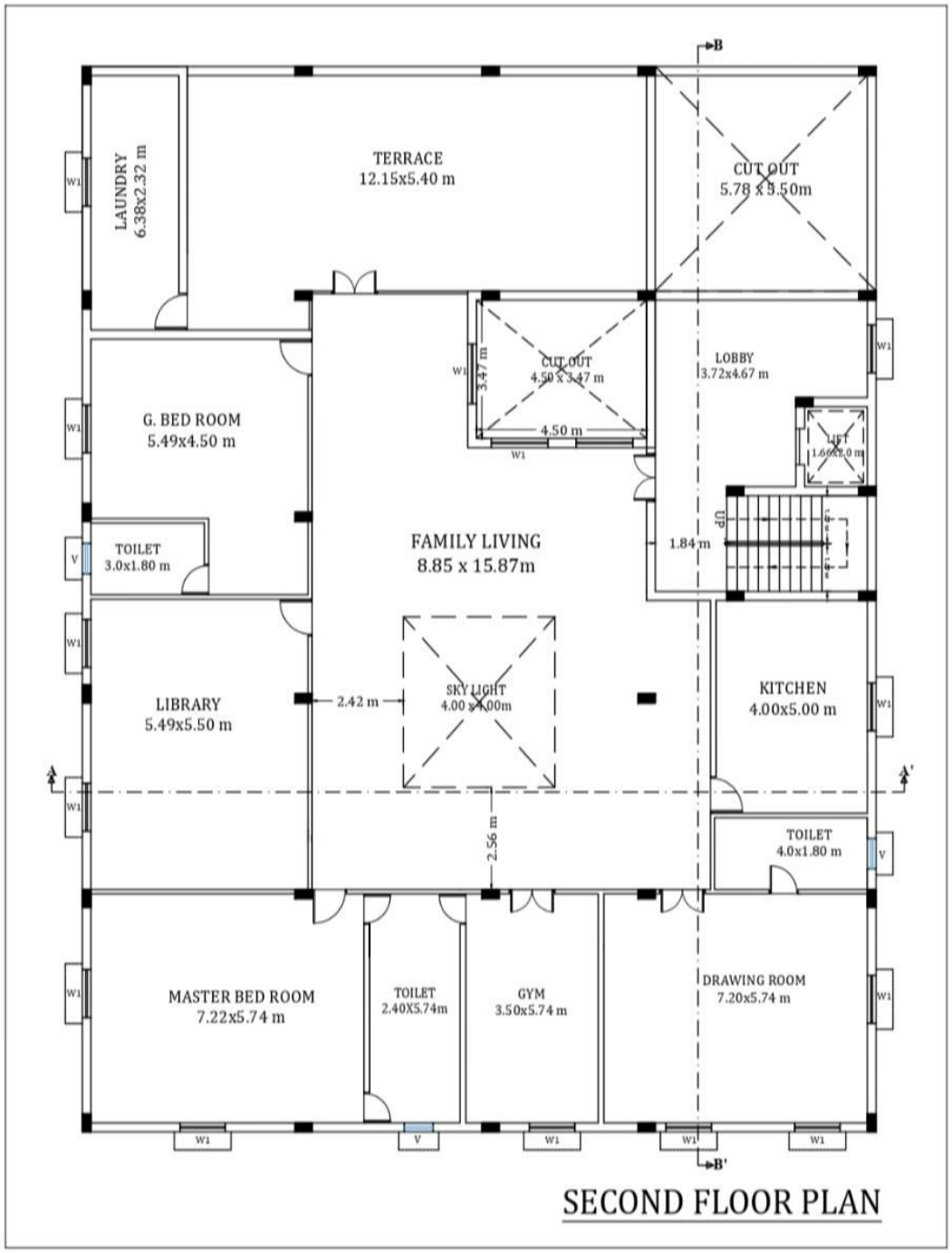

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V.CONCLUSION

Designing a farmhouse using 3ds Max software involves several key steps, starting with creating the basic structure of the house, including walls, windows, doors, and the roof. The software's powerful modeling tools allow for precise and detailed designs, making it possible to add intricate architectural elements and textures1. Users can also simulate real-world lighting conditions and materials to create realistic renderings of the farmhouse. The process typically includes: Modelling ,Creating the basic structure and adding details such as windows, doors, and roofing.Texturing relates to applying materials and textures to give the model a realistic appearance.Lighting, Setting up lighting to simulate different times of day and weather conditions.Rendering and Generating the final image or animation of the farmhouse.Overall, 3ds Max provides a comprehensive suite of tools for architectural visualization, making it an excellent choice for designing farmhouses and other structures

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