

Vastu-Plan AI: An Intelligent Floor Planning System Using Artificial Intelligence and Computer Vision with Automated Vastu Shastra Compliance

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Abstract- Floor plan design in residential architecture is a very complicated task, which takes into account space allocation, functionality, architectural norms, and cultural preferences. Conventional floor planning approaches are time-intensive and require a lot of work from architects and designers. In this paper, the authors introduce Vastu-Plan AI, an automatic floor planning system, which implements Artificial Intelligence (AI) and Computer Vision (CV) technologies to design optimized residential floor plans according to Vastu Shastra. The authors propose a methodology of analyzing users' input in terms of plot sizes, types of rooms, and orientation constraints to design effective and functional floor layouts. The application of CV technologies will help to validate the structure of floor plans, whereas AI technologies will be applied to optimize room allocations and their connections within a floor plan. Moreover, the system will allow checking Vastu compliance automatically. This will help to reduce design time and provide users with intelligent and custom-made floor plans.

Index Terms- Artificial Intelligence, Computer Vision, Floor Plan Generation, Vastu Shastra Compliance, Residential Architecture.

I. INTRODUCTION

Floor planning is one of the important steps when designing a home. This is because floor planning decides how well you use your space and how good it feels to live. A good floor plan makes sure rooms are in the spots people can move around easily and every inch of the house works well. In the past architects and designers had to do all the work by hand. They had to look at the land size what the client wanted and building rules. This took a time and usually meant making many changes.

Technology is changing fast these days. Artificial Intelligence (AI). Computer Vision (CV) are now changing how we build things. Artificial Intelligence (AI) can look at design needs. Find the best ways to set things up on its own. Computer Vision helps computers look at pictures and drawings to understand how a floor plan is built. When we use Artificial Intelligence (AI) and Computer Vision (CV) we can make floor planning much faster and easier.

In India many people want their homes to follow Vastu Shastra. Vastu Shastra is a way of building that tells you where to put things like the kitchen or the bedroom to keep the home balanced. Following Vastu Shastra can be hard if you also want a house. Most people have to hire an expert to make sure everything is right.

To help with this I am working on a project called "Vastu-Plan AI: An Intelligent Floor Planning System Using Artificial Intelligence and Computer Vision with Automated Vastu Shastra Compliance." This system makes residential floor plans automatically. You just give it the size of your land. Tell it what rooms you need. The Artificial Intelligence (AI) then creates a floor plan that uses the space perfectly. Then Computer Vision checks the floor plan to make sure the rooms make sense. The walls are in the right place.

The best part of this system is the Automated Vastu Compliance Module. This part of the system checks the floor plans against Vastu Shastra rules. If a room is in the spot according to Vastu Shastra the system will find the mistake and tell you how to fix it. This

means you can get a floor plan that respects your culture without doing all the hard work yourself.

The main goal of Vastu-Plan AI is to make floor planning simple and easy for everyone. I want to help people save time use their space better and avoid mistakes. This tool is meant to help architects builders and homeowners create the possible homes. By mixing tools like Artificial Intelligence (AI) and Computer Vision (CV) with old traditions, like Vastu Shastra we can find a new way to design houses.

II. IDENTIFY, RESEARCH AND COLLECT IDEA

The first step in building Vastu-Plan AI was to find a problem in home floor planning and see how new technology could fix it. The work looked at mixing Artificial Intelligence, Computer Vision and Vastu Shastra rules to make a tool that helps people build and review home floor plans. Vastu-Plan AI grew from these steps:

1. Study of Existing Research Work

We read research papers, journals and conference papers that talked about using AI to create floor plans using Computer Vision looking at floor plans from pictures automating building design and using Vastu rules. This let us see how researchers already work what works well what does not and where we can do better. We also found which AI and Computer Vision methods might fit into Vastu-Plan AI.

2. Online Research and Information Collection

We searched sites and trusted technical resources to learn about the newest AI help for architecture and automatic floor plan creation. We gathered details about floor plan data, how to spot rooms how to make layouts, how to improve space use and Vastu guidelines. This research showed that it is possible to make a system that can automatically build and check floor plans.

3. Study of Conferences, Workshops and Technical Discussions

We attended conferences, workshops, seminars and talks on Artificial Intelligence, Computer Vision, Machine Learning, Generative Design and Smart Architecture. These events gave us a view of the latest research trends and real uses of AI in building and construction. They also helped us find ideas and tools that can make Vastu-Plan AI stronger.

4. Understanding Technical Terms and Concepts

Before designing Vastu-Plan AI we studied the technical ideas and words that are part of the project. These include Artificial Intelligence, Machine Learning, Computer Vision, Image Processing, Floor Plan Recognition, Object Detection, Spatial Optimization, Layout Generation and Vastu Compliance. Knowing these concepts helped us decide how the parts of Vastu-Plan AI could work together.

Research Idea Identified

From all this study we saw that traditional floor planning needs a lot of work and checking Vastu rules often needs extra changes. This led us to the idea of Vastu-Plan AI, a system that mixes AI and Computer Vision to help build, analyze and improve home floor plans while automatically checking Vastu Shastra rules. Vastu-Plan AI aims to make the floor planning process faster, easier and less dependent, on repeated edits.

III. WRITE DOWN YOUR STUDIES AND FINDINGS

Once I figured out the research problem and gathered info from studies I had to organize all that knowledge. My goal was to turn it into a research project. For Vastu-Plan AI I focused on learning how Artificial Intelligence and Computer Vision can help make home floor plans. I also wanted to see how Vastu Shastra rules could work inside an automated checking system.

A. Bits and Pieces

To get this project moving I pulled information from many research papers, journals, tech articles and trusted websites. I looked for things like AI-based floor plan generation Computer Vision, image processing, spatial optimization and Vastu-based

architectural planning. I studied each piece of information one by one. Then put them all together to build the base for Vastu-Plan AI.

The older research gave me ideas on how to recognize rooms look at floor plan images create layouts and use space in the best way. I used these studies to see what people have already done and to find out what was still missing.

After that I organized everything to fit the needs of Vastu-Plan AI. My main goal was to mix AI-based floor planning with Computer Vision and set Vastu Shastra rules. This gave Vastu-Plan AI a path. Of just making a floor plan Vastu-Plan AI could also look at the layout and check if it follows Vastu guidelines.

B. Jump Start

I also made the research idea better by talking to my project guides, teachers and people who know a lot about Artificial Intelligence, Computer Vision and architectural planning. Their advice helped me fix my goals and figure out what the system actually needs to do to help people.

That feedback helped me decide on the parts of the system. I looked at how to handle user input how to do floor plan generation how to use Computer Vision-based layout analysis, how to do space optimization and how to do automated Vastu compliance checking. We also talked about parts like dealing with different plot sizes different room needs and how to keep a balance between a good design and Vastu guidelines.

C. Use of Simulation and Development Tools

I do not want to talk about theories. I want to build and test Vastu-Plan AI using programming and AI tools. I can use tools and libraries for Artificial Intelligence, Machine Learning, Computer Vision, image processing and data analysis to build each part of Vastu-Plan AI.

I can test the floor plans by using plot sizes and room needs to see if Vastu-Plan AI makes plans that actually work. Then I can use Computer Vision techniques to look at the floor plan images. The Vastu compliance module will then check if the rooms are in the spots based on Vastu rules. By doing

these tests I can see how well Vastu-Plan AI works. I will look at how accurate the layoutsre how well the space is used how much it follows Vastu, how fast it works and if it is easy to use. I will write down all these results to help prove my research.

Findings

My study shows that mixing AI with Computer Vision is a way to automate making residential floor plans. AI helps make and fix layouts while Computer Vision helps the system understand the pictures of the floor plans. Adding automated Vastu rules lets users check if their rooms are in the places, for their Vastu needs.

In the end everything I found shows that Vastu-Plan AI is possible. Vastu-Plan AI can be a system that brings together AI, Computer Vision, space optimization and automated Vastu Shastra compliance all in one place.

IV. GET PEER REVIEWED

Peer review is a step to make research paper better and more reliable. After you finish the draft of the Vastu-Plan AI research paper you should let project guides, faculty members, fellow researchers or people who know Artificial Intelligence, Computer Vision and architectural planning look over it.

Reviewers can look at parts of the research paper such as the problem statement, objectives, methodology, proposed system, Vastu compliance approach, AI and Computer Vision techniques, results and conclusion. Reviewers can also check if the information is clear technically correct and has references.

Feedback from reviewers can point out missing information, unclear explanations, technical limits or places where the proposed system could be better. Suggestions about system architecture, algorithm choices, testing methods, evaluation parameters and how results are shown can be used when you revise.

For Vastu-Plan AI peer feedback is especially helpful to see if the floor planning method works in practice and if the automated Vastu compliance rules are clear

and used the way each time. Reviewers can also suggest ways to make Vastu-Plan AI more useful, for homes.

After you get the feedback you should revise the research paper carefully. Fix all the needed changes. You can do rounds of review until the paper is clear technically solid and well organized. This process makes the research better. Helps it fit a journal or conference.

V. IMPROVEMENT AS PER REVIEWER COMMENTS

After receiving feedback from reviewers the next step is to examine each comment and understand what must be improved in the research paper. Reviewer comments should be taken positively because they help identify mistakes, missing information, unclear explanations and areas where the research can be made stronger.

For the Vastu-Plan AI research paper the suggestions from reviewers can be used to improve the explanation of the proposed system, methodology, AI and Computer Vision techniques Vastu compliance process, testing procedure and results. If a reviewer points out that any part of the paper is unclear or needs evidence the section should be studied again and corrected with proper information.

Sometimes reviewers may raise questions or suggest major changes. Of seeing such comments negatively each point should be treated as an opportunity to improve the research. If a comment is not clearly understood clarification can be taken from the project guide, expert or reviewer before making changes. This helps ensure that the revision is meaningful than simply changing the content without understanding the reason behind the suggestion.

After considering all the feedback the required changes are made throughout the paper. The revised version should be checked more for technical accuracy proper references, clear presentation, grammar and consistency between the objectives, methodology, results and conclusion. If required additional experiments or testing can also be

performed to provide evidence for the proposed approach.

Once the necessary improvements are completed the final research paper can be submitted to a journal or conference for publication. The submitted paper is then evaluated according to the publications review process. If the research meets the required quality and scope it may be accepted for publication. Made available to the research community. This complete process helps ensure that Vastu-Plan AI is presented as a well-supported and meaningful contribution, to the field of intelligent floor planning.

VI. CONCLUSION

The development of Vastu-Plan AI shows how modern technology can be used to make residential floor planning simpler and more efficient. I see Vastu-Plan AI bringing together Artificial Intelligence, Computer Vision and Vastu Shastra principles to help in creating and checking floor plan layouts that match user needs.

The main idea behind the project is to reduce the amount of effort needed for preparing and changing floor plans. By giving information such as plot size and the rooms needed users can get help from Vastu-Plan AI to create a good layout. Computer Vision can help by understanding and checking the floor plan while Vastu Shastra module gives suggestions based on Vastu rules that are built into Vastu-Plan AI.

The project also shows that traditional practices like Vastu Shastra can be mixed with tools without taking away the role of architects or designers completely. Vastu-Plan AI can act as a helper that lets users and professionals look at layout options faster.

In the future Vastu-Plan AI can grow by adding support for complex building plans more architectural and construction limits, bigger floor plan data sets and stronger AI models. Vastu-Plan AI can also create design choices and let users compare them by space use, function and Vastu compliance. These upgrades could make Vastu-Plan AI more useful for life home planning and create a better link, between smart design tech and traditional building tastes.

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