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Leveraging LLM and Web Languages to Construct Vastu Tool for House Map Division and Answering Queries

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ABSTRACT

- This paper introduces a method for integrating ancient Vastu Shastra principles into modern house division using Large Language Models (LLMs).
- The Tool combines traditional wisdom with modern technology, offering features like house map division based on compass degrees. It aims to help homeowners & architects design spaces in accordance with Vastu principles. By incorporating Vastu Shastra into modern techniques, tool assists in making optimal choices for room placements and remedies for inaccuracies.
- The paper has been supported with case studies on Angkor Wat and Infrastructure Leasing & Financial Services (IL & FS) which depict the Vastu features of these places and the results obtained from our tool aligned with these features.
- A recent study highlighted in The Economic Times reveals that 93% of home buyers in major cities prioritize Vastu-compliant homes.
- Our tool justifies the house map into 8/16 zones and directions and helps in analyzing the placement of rooms and its impact on us.

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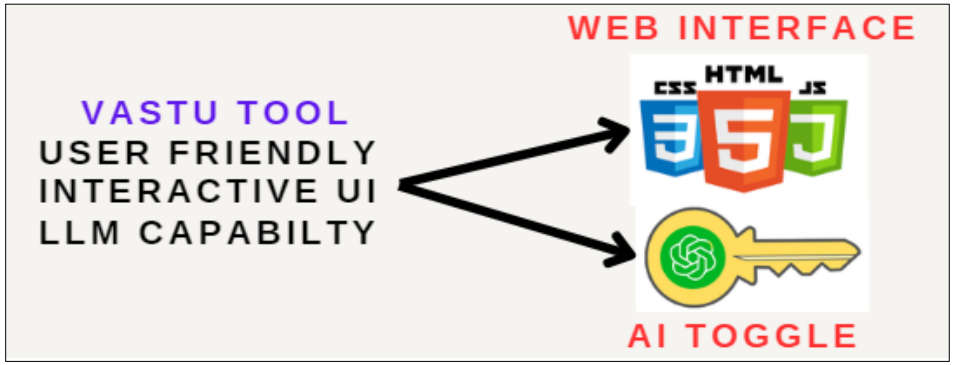
INTRODUCTION

- Vastu Shastra literally means *"study of suitable dwellings."*
- **Web Interface:** The web interface or the UI visible to the user is built using three web development technologies- HTML, CSS, and JavaScript. We used HTML to create a basic structure of our webpage and styled it using CSS. JavaScript was further used to add interactivity to the website by adding functionality such as slider to change size, radio buttons to choose the number of zones in the Vastu Compass, input box for value of rotation in degrees for the compass, etc.
- **AI Toggle:** Once the AI is enabled by switching on the AI Toggle, we have a chat-based environment for interacting with the Vastu Bot. We signed up for the ChatGPT API and obtained the API key to get access to its functionality



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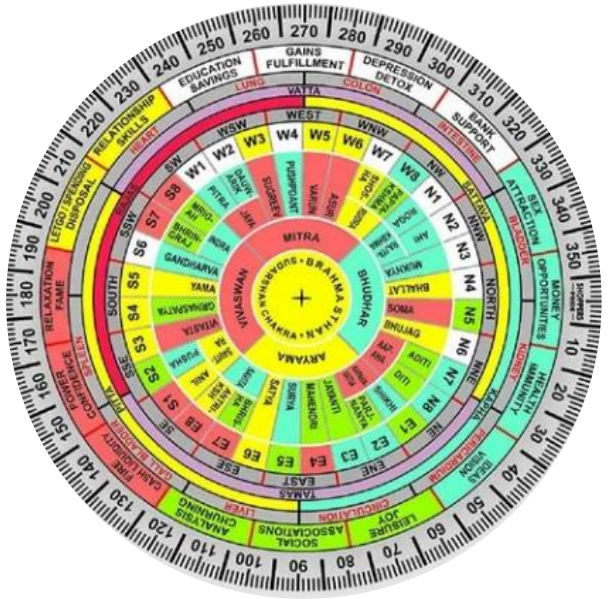
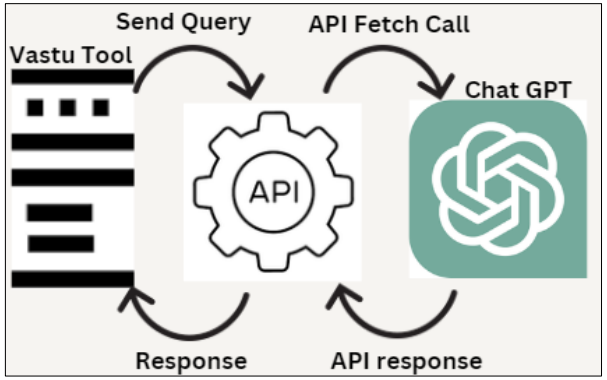
INTRODUCTION

Table showing comparison of proposed approaches.

Parameter	Manual Tool	Vastu Tool
Type	Manual	Software
Human Calculation	Required	Not Required
Complexity	High	Low
Accuracy	Moderate	High
Time Consumption	High	Low
Ease of Access	Limited (requires expertise)	Widely Accessible
Addressing Questions	Manual Google Surfing	Interactive Chat Interface
Remedies Availability	No	Yes
Integration with LLMs	No	Yes



Vastu Compass for Manual Map Gridding



API call architecture

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LITERATURE REVIEW

LITERATURE REVIEW	LINK	REFERENCE
Vastu Shastra, an ancient Indian architectural science, focuses on creating balanced living spaces to enhance well-being [1].	[1]	Shanta D., Mahendra J.: Redefining Vastu Shastra Principles with Reference to the Contemporary Architectural Practices in India. Journal of Pharmaceutical Negative Results, 11(3) 349-58, (2022).
Dividing house maps into zones dedicated to deities or elements reflects the spiritual significance of architectural design [2] [3].	[2] [3]	Ruchika S.: Study of Principles and Directions of Vastu in Residential Space. Interna-tional Research Journal of Engineering and Technology, 7(2) 97-102, (2020). Mehul H., Priyanka R.: Vastu Shastra: A Vedic Approach to Architecture. International Journal of Engineering Research and Technology, 11(2) 295-298, (2022).
Traditional Vastu principles, combined with modern technology, influence decisions in home construction [4].	[4]	Reeta G.: Comparison of Vastu Shastra with Modern Building Science. International Journal of Research and Scientific Innovation, 3(7) 118-121, (2016).
The impact of Vastu effects, such as colors and directions, on living spaces is supported by house maps [5].	[5]	Utpal K. N., Shravani N., Antara N.: Utility of the Ancient Indian Science of Vaastu in Mod ern Architecture. Journal of Civil Engineering and Environmental Sciences, 3(1) 008-012, (2017).
The Mahavastu's 16 zones are widely used in Vastu, offering guidance on spatial allocation and remedies. Surveys show a growing trend in society supported by modern case studies [6] towards exploring and believing in mythology and astrology [7].	[6] [7]	Pashmeena V. G., Abraham G.: Scientific Rationality in Vaastu Purusha Mandala: A Case Study of Desh and Konkan Architecture. New Design Ideas, 5(2) 195-209, (2021). Piyush D. P., Piyushkumar J. P.: State of Art on Vastu Shastra. Journal of Harbin Engineering University, 44(7) 1264-1271, (2023).
Cities are adopting Vastu science in urban planning for sustainable development [8].	[8]	Reena P.: Vaastu Shastra: Towards Sustainable Development. Sustainable Development, 17 (4) 244-56, (2009).
Leveraging technology, we provide chatbot for personal assistance in Vastu using Large Language Models (LLMs) [9].	[9]	Rohit T., Niraj W.: Design and Development of CHATBOT: A Review. In: INTERNATIONAL CONFERENCE on "Latest Trends in Civil, Mechanical and Electrical Engineering", Bhopal (2021).

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PROPOSED METHODOLOGY

SYSTEM ARCHITECTURE

Structure Creation: Utilizing HTML and CSS, we establish a user-friendly interface with functional buttons and input options.

Panel Features: The panel offers options such as adding layout images, initiating pinning, and activating the AI chat interface.

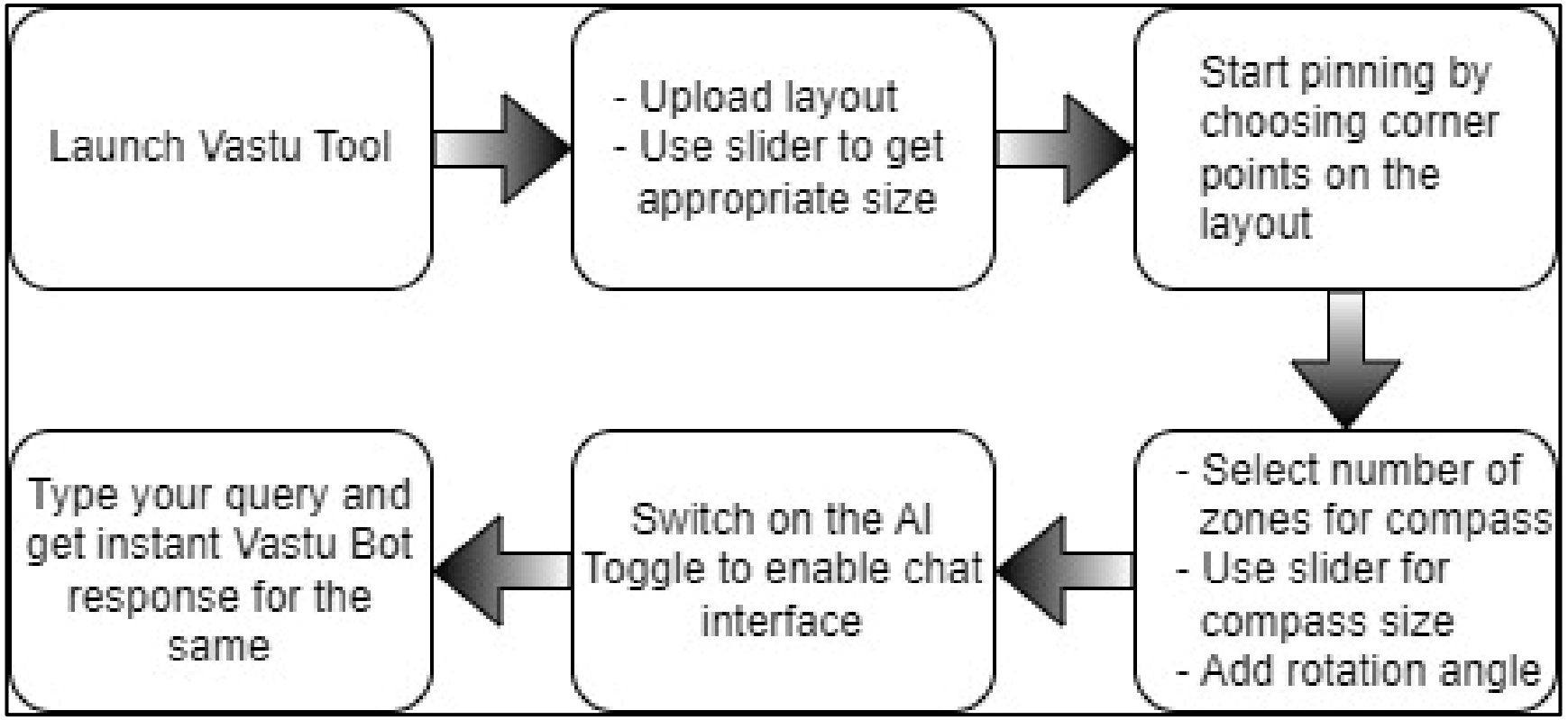
Playground Setup: A playground area allows users to add layout images, pin points, and view zone divisions via an SVG compass.

Chat Interface: When the AI toggle is activated, users can engage with a ChatGPT-powered Vastu bot for insights on favorable directions and remedies.

SYSTEM COMPONENTS

- **Layout Image Layer**: The foundational layer containing the house or office layout.
- **Canvas**: Utilizing a transparent canvas overlaying the image for pinning points and connections to ensure visibility of the underlying layout during pinning.
- **SVG Compass**: A customized compass, represented as an SVG element, indicating different zones based on user-defined parameters. Positioned atop the canvas, it delineates the zones within the layout.
- **AI Integration**: Employing a LLM, ChatGPT to access detailed information and remedies. Upon toggle chat-like interface appears.
- **Query Submission**: Users input queries, triggering an API Fetch Call to transmit the query to the model (e.g., ChatGPT).
- **Response Retrieval**: The model processes the query and returns a formatted response stream via the API, which is displayed within the chat interface on the screen.

DEMO AND IMPLEMENTATION



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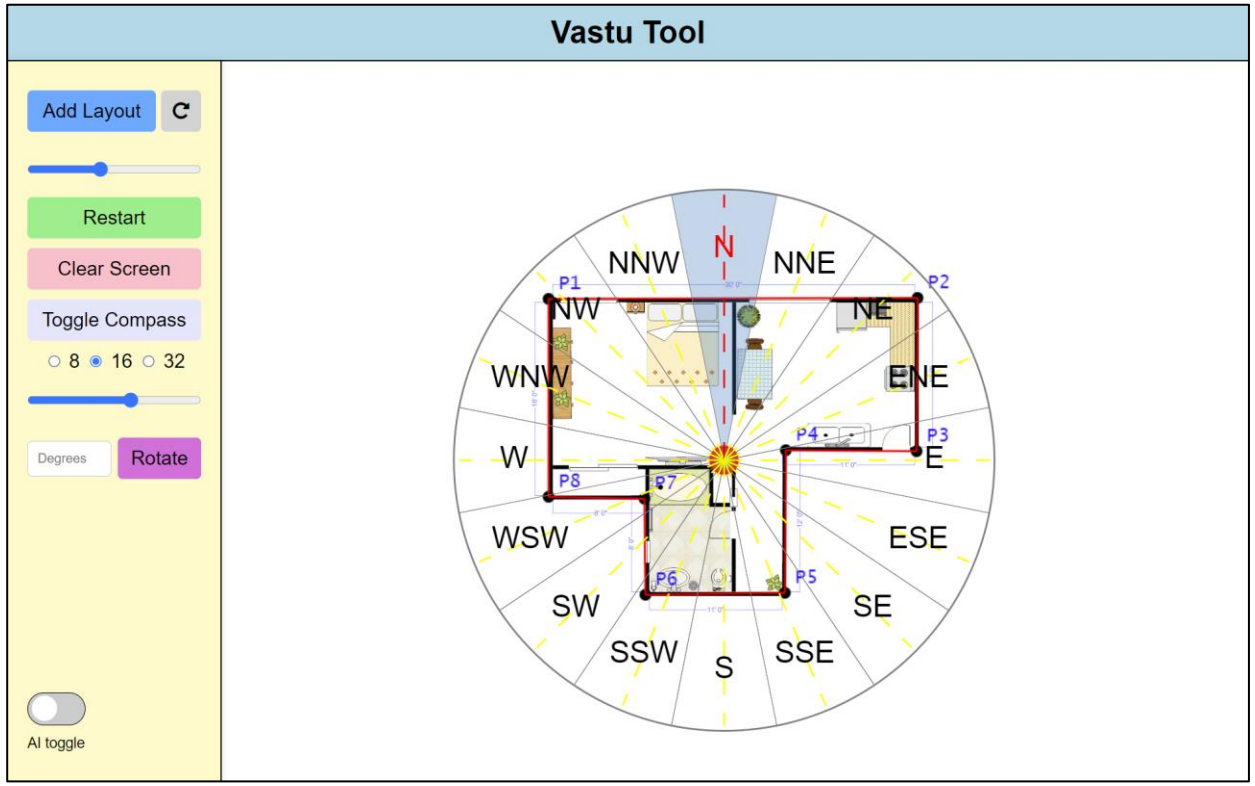
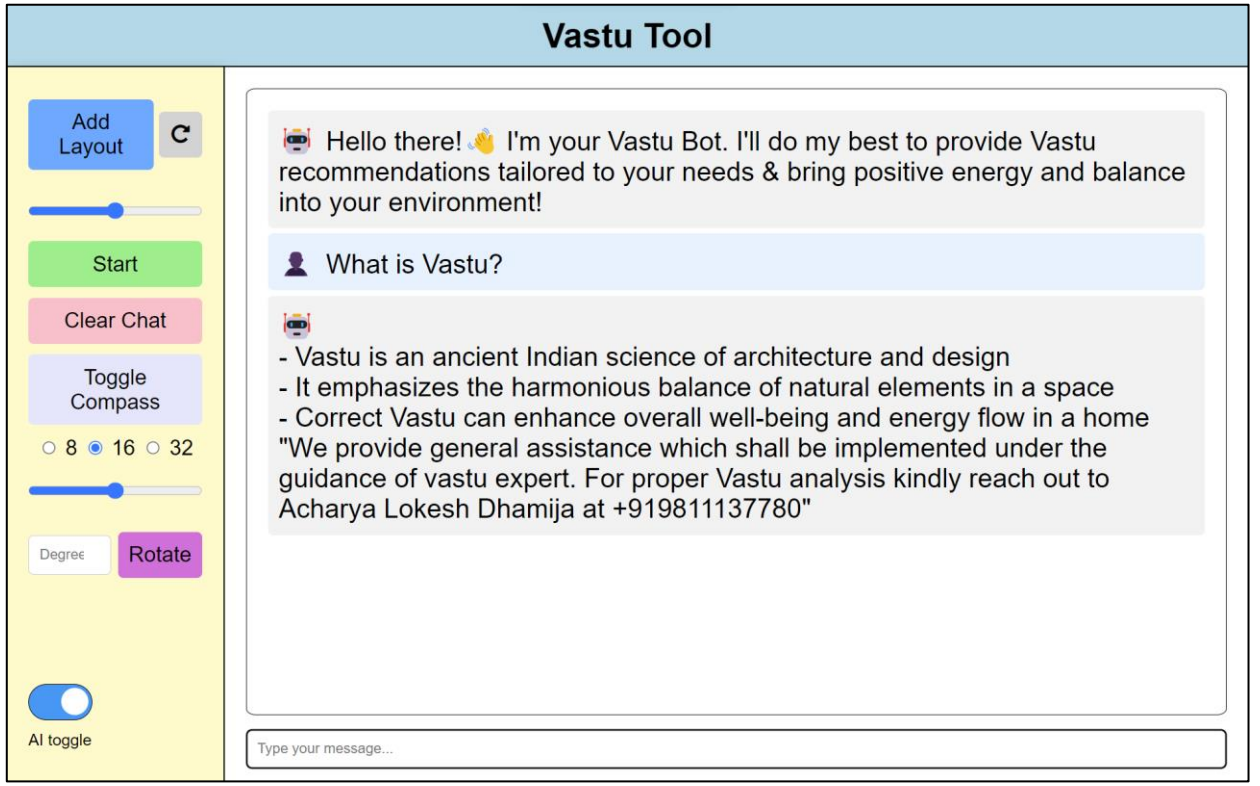
RESULTS & DISCUSSION





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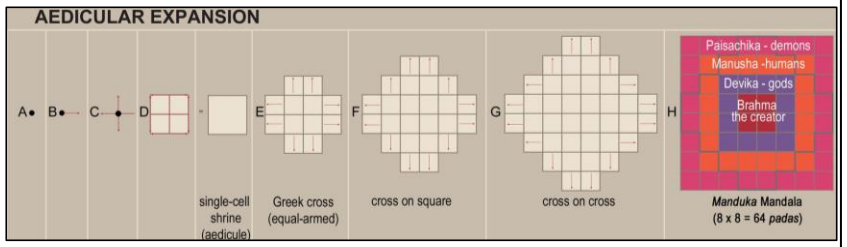
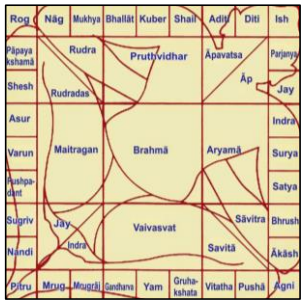
CASE STUDY-ANGKOR WAT

This image is responsible for showing the aedicular expansion which resembles the Vastu mandala blocks. Next image depicts the Vastu-Purusha and the traditional placement of deities. We also see a front view of Angkor Wat temple, a magnificent example of Khmer architecture. And finally we show a screenshot of our Vastu bot supporting features described earlier.





Angkor Wat is a Hindu-Buddhist temple in Cambodia and the largest religious monument in the world. It deploys principles of Vastu Shastra,give examples

- Angkor Wat's layout is based on Vastu principles.
- It faces towards the West, symbolizing death.
- The central tower represents Mount Meru, the abode of the gods.
- Each section is dedicated to different deities.
- The temple's design promotes harmony and balance in energy flow.

ASPECT	ORIENTATION
ORIENTATION	west-facing, reflecting harmony with natural elements.
LAYOUT	follows a mandala-like plan, with concentric galleries and structures arranged around a central tower.
SYMBOLISM	cosmic order and harmony, resonating with Vastu Mandala's emphasis on geometric proportions and spatial organization.
ARCHITECTURAL FEATURES	incorporates intricate carvings & sculptures depicting Hindu cosmology & mythology, which align with sacred Vastu principles.
CULTURAL INFLUENCE	It's architectural grandeur & spiritual meaning influence art, architecture, & culture across Southeast Asia, reflecting Vastu principles.

CONCLUSION & FUTURE WORK

- Vastu Tool showcases the transformative impact of AI on astrology, leading the mapping of physical house/plot maps into directional zones
- Helps study correct and incorrect placements, remedies, impact, and other user queries on vastu
- Aims to become a comprehensive platform for creating harmonious and Vastu-compliant environments
- Enhancements can further improve its functionality:

➢ Integrating augmented reality (AR) technology for visualizing designs
➢ Offering professional consultation services with certified experts
➢ Providing interactive tutorials and workshops
➢ Developing a mobile application
➢ Implementing Vastu energy bar graphs and database save options.

THANK YOU