

Architectural Intelligence Inspired by Vastu

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Abstract: *This project explores the integration of Artificial Intelligence (AI) with traditional Vastu principles to create smart, harmonious architectural designs. By leveraging AI techniques such as machine learning, computer vision, and natural language processing, the system optimizes spatial layouts and automates Vastu compliance checks, offering personalized recommendations that enhance user comfort, energy balance, and cultural relevance. The approach bridges modern technology with ancient architectural wisdom, enabling efficient, aesthetically pleasing, and spiritually aligned living spaces tailored to individual preferences. This fusion of AI and Vastu is poised to revolutionize interior design by making it more intelligent, adaptive, and culturally sensitive. The platform offers personalized recommendations by learning user preferences and adapts designs for energy efficiency and environmental sustainability. The 30 tactics we identified are aimed to serve as an initial reference guide for further exploration into Green AI from a software engineering perspective, and assist in designing sustainable ML-enabled systems. The platform offers personalized recommendations by learning user preferences and adapts designs for energy efficiency and environmental sustainability.*

CCS CONCEPTS

- Software and its engineering → Designing software; Software architectures;
- Social and professional topics → Sustainability;
- Computing methodologies → Machine learning.

Keywords: Software architecture, architectural tactics, ML-enabled systems, environmental sustainability, Green AI.

Lay Abstract: *Machine learning (ML) is a technology field that wants to provide software with functionality similar to human-like intelligence, e.g., for understanding text or describing images. However, creating and using systems with ML needs a lot more computing power than non-ML systems, which is bad for the environment. Companies therefore need concrete advice on how they can create ML systems that are environmentally sustainable. In this paper, we provide a catalog of 30 green architectural tactics for these systems. An architectural tactic is a high-level design technique to improve software quality, in our case environmental sustainability. To achieve this, we analyzed 51 scientific papers and later discussed with 3 experts to improve and extend our catalog. If many companies start using these tactics, the energy footprint of systems with ML can be greatly reduced.*

