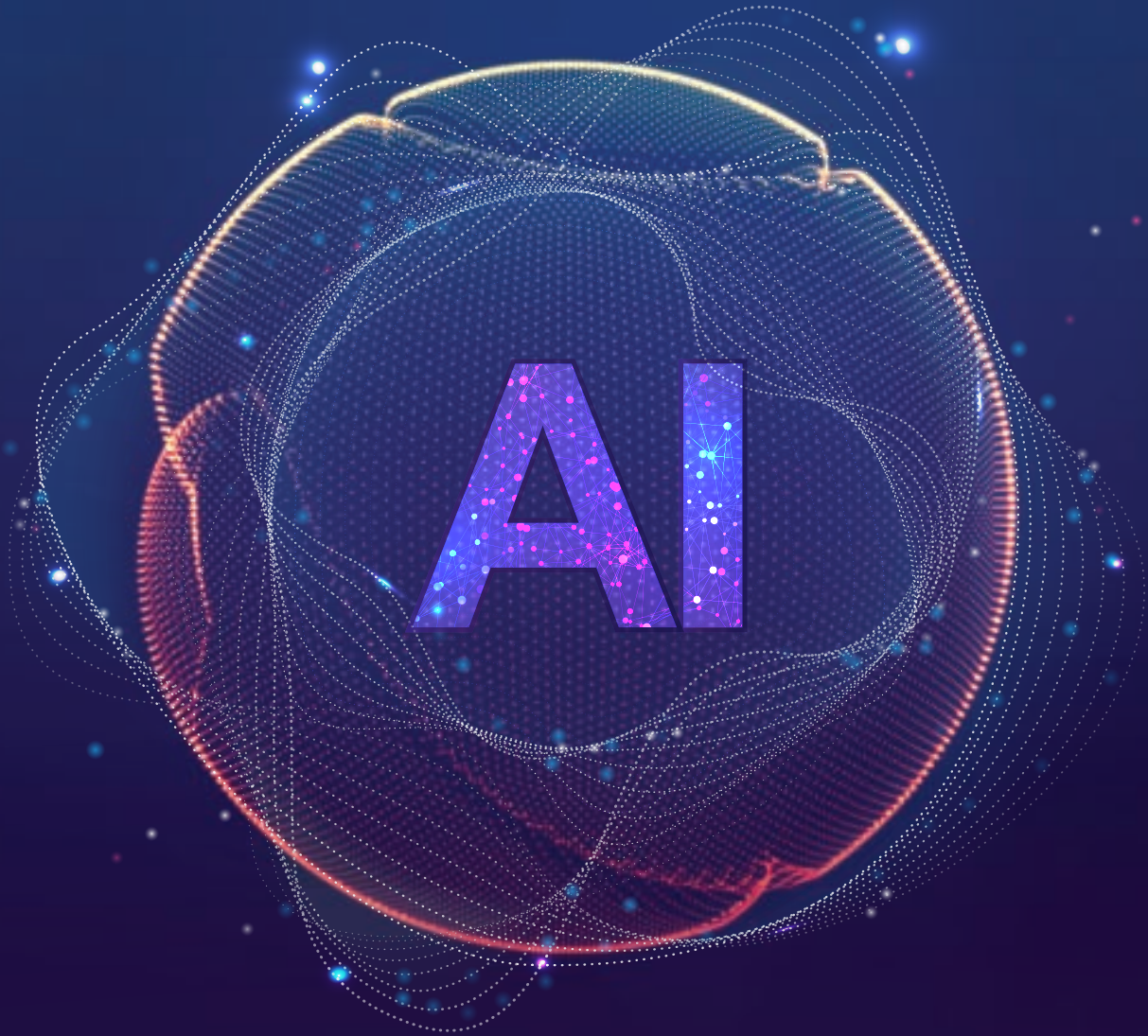




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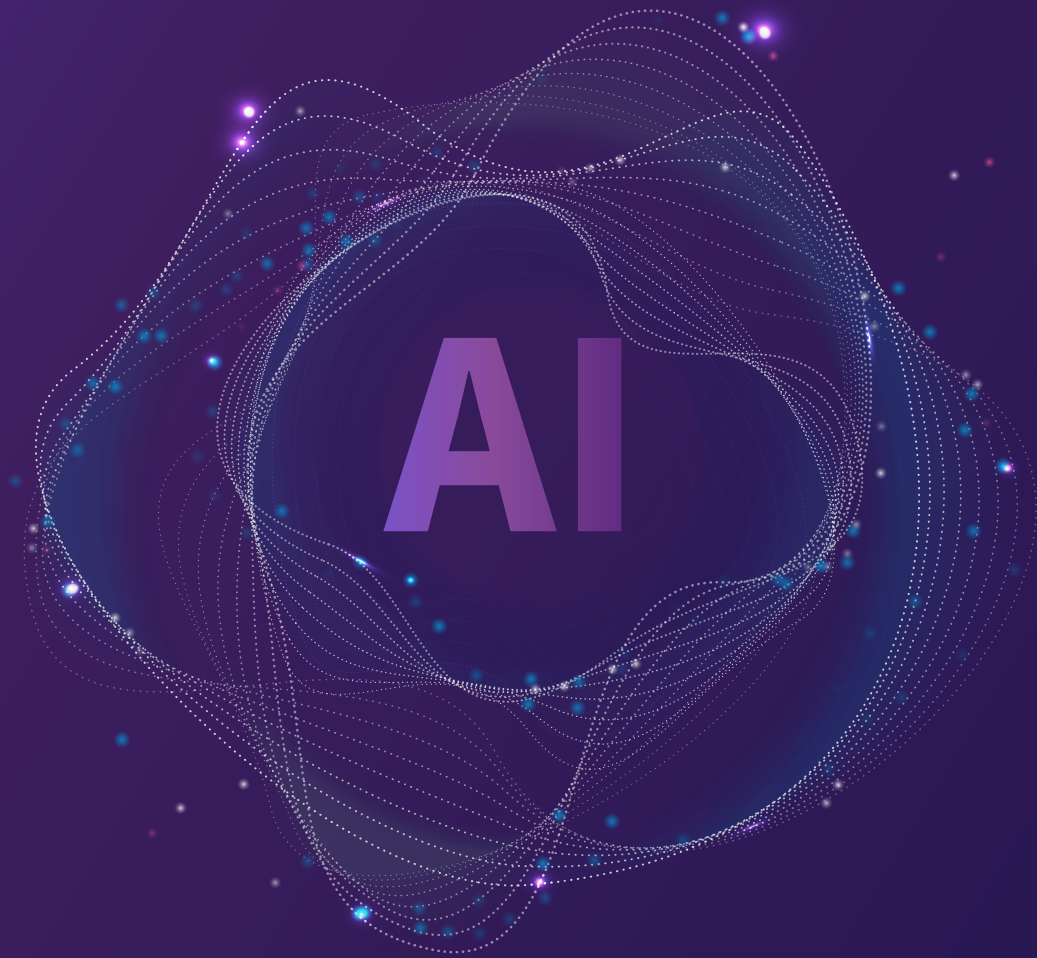
AI IN DESIGN:

BUILDING A FUTURE-READY CREATIVE ECONOMY

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FOREWORD



Dr Udayant Malhoutra

Chairman,
CII National Committee on
Design Innovation (2025-26) and
CEO and MD, Dynamatic Technologies Ltd.

Artificial Intelligence is rapidly transforming the way we perceive, create, and deliver design. Across industries, AI is expanding the boundaries of human imagination, enhancing precision, speed, and scale while simultaneously redefining the role of designers as strategic thinkers and collaborators with intelligent systems.

In this evolving landscape, design is no longer limited to the creation of products or experiences; it is about shaping intelligent ecosystems that respond, learn, and evolve with users. The future of design lies in harnessing AI not merely as a technological tool but as a creative partner that empowers human ingenuity, strengthens empathy-driven innovation, and supports sustainable outcomes.

For India, this transformation represents both a challenge and an opportunity. With its unique cultural diversity and growing technology base, India can pioneer AI-driven design solutions that are inclusive, contextually grounded, and globally relevant. It is imperative that we build a design ecosystem that embraces AI responsibly, guided by ethics, creativity, and purpose.

This report, *Design in Artificial Intelligence*, reflects the depth of thought and expertise within India's design community. It captures how AI is shaping design education, research, and practice while reinforcing the central role of human values in innovation.

As Chairman of the CII National Committee on Design, I believe this report will serve as a catalyst for dialogue and action, inspiring designers, industries, and policymakers to co-create a future where intelligence and empathy coexist in harmony.

EXECUTIVE *Summary*

Artificial Intelligence (AI) is redefining how design is conceived, created, and consumed. From generative tools like Midjourney, DALL·E, and ChatGPT to intelligent systems that personalize user experiences, AI has shifted from being a peripheral digital aid to becoming a central collaborator in the creative process.

In this transformative phase, design no longer operates as a linear human-led activity but as a dynamic dialogue between designers and machines. The integration of AI is not only improving design efficiency but also expanding creative horizons, enabling designers to simulate environments, predict user emotions, and iterate at unprecedented speed. However, this advancement also raises essential questions about authorship, ethics, and cultural representation — areas where human sensibility must remain paramount.

This report captures collective insights from design professionals and complements them with global data and CII's ongoing research. It examines how AI is transforming design ecosystems in India and worldwide, identifies key opportunities and challenges, and proposes strategic directions for building a responsible, inclusive, and future-ready AI–design interface.

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Key Highlights

- AI is evolving from a tool for efficiency to a co-creator—enabling generative and participatory design systems.
- Designers are developing new literacies such as prompt engineering, data interpretation, and system thinking to harness AI effectively.
- Ethical grounding, empathy, and cultural context remain non-negotiable in meaningful AI-driven design.
- India's socio-cultural diversity and multilingual landscape provide fertile ground for creating inclusive AI design systems that are globally relevant yet locally rooted.
- The coming decade will demand AI fluency across design education, practice, and governance to strengthen India's position as a global design innovation hub.

INTRODUCTION:

The Intersection of AI and Design

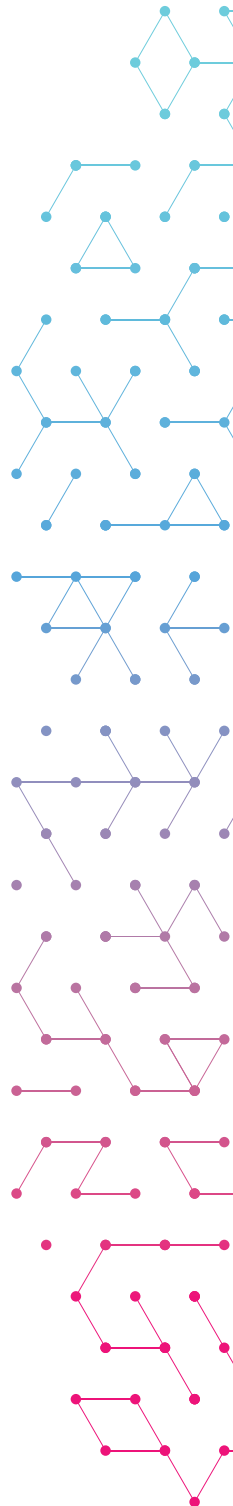
The convergence of AI and design marks one of the most significant creative revolutions of the 21st century. Historically, design has thrived on human intuition, imagination, and empathy. Today, these human traits are being augmented by machine intelligence that can learn, adapt, and predict — reshaping the fundamentals of how creativity operates.

AI enables designers to move beyond manual iteration to explore complex design spaces. Machine learning algorithms can process millions of variables — from ergonomics and environmental conditions to social sentiment and behavioral data — revealing insights that were previously invisible. For instance, automotive design teams now use AI simulations to analyze driver posture, safety patterns, and environmental factors simultaneously, compressing weeks of research into hours.

Yet, despite this power, AI must remain a partner, not a replacement. True design value emerges from blending human empathy with machine efficiency. As one expert insightfully expressed,

“The next generation of design is not human vs AI, but human + AI — a partnership guided by purpose and ethics.”

The intersection of design and AI thus invites a new responsibility: ensuring that technology amplifies empathy, celebrates diversity, and preserves the distinctly human dimension of creativity.



AI IN DESIGN – *Global and Indian Context*

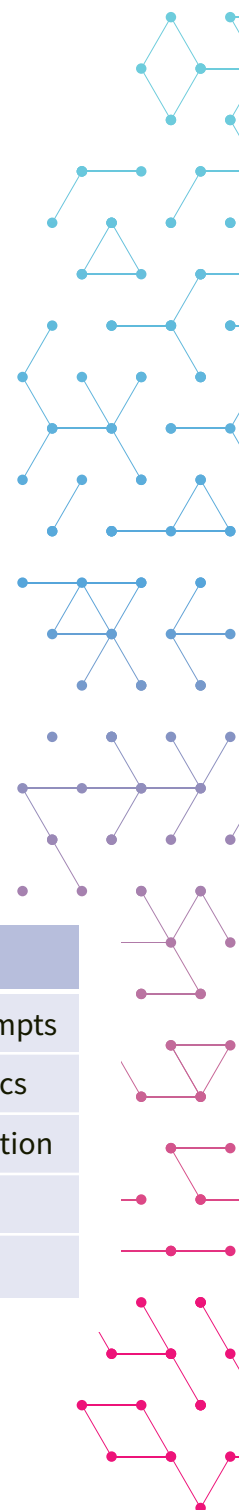
AI's adoption in the design sector has accelerated rapidly across the globe. The global market for AI-driven design tools and services reached USD 6.9 billion in 2024 and is expected to cross USD 15 billion by 2030 (Statista, 2025). Over 68% of design teams worldwide now employ AI tools in at least one phase of the creative process—be it ideation, research, or production.

In India, over 200 AI-enabled startups are pioneering new intersections between design, creativity, and technology. From Bengaluru-based UX analytics firms using AI to interpret user emotions, to Mumbai's generative design labs integrating traditional crafts with digital intelligence, Indian design is embracing a distinctly hybrid future.

The design education ecosystem, led by NID, IIT Delhi, IDC IIT Bombay, and Srishti, is embedding AI and human-machine interaction into curricula—reflecting a growing consensus that design literacy now includes digital fluency.

Dimension	Traditional Design	AI-Assisted Design
Ideation	Manual brainstorming	Generative co-creation using text/image prompts
Research	Surveys, ethnography	Data-driven behavioral modeling and analytics
Execution	Manual visualization	Automated rendering, prototyping, and variation
Evaluation	Post-launch user testing	Predictive and real-time AI feedback systems
Output	Designer-defined	Human-Machine co-created outcomes

While global firms lead in tool development, India's strength lies in adaptation—localizing AI for linguistic, cultural, and accessibility needs.



THE EXPANDING

Role of AI in Design

AI has moved from being a background process to becoming a creative material in itself—an ingredient designers mold and manipulate. Its presence spans nearly every design domain:

3.1 Product and Industrial Design

AI-driven modeling systems, such as Autodesk Fusion 360 and PTC Creo, enable generative design that can produce thousands of form variations optimized for strength, weight, and cost.

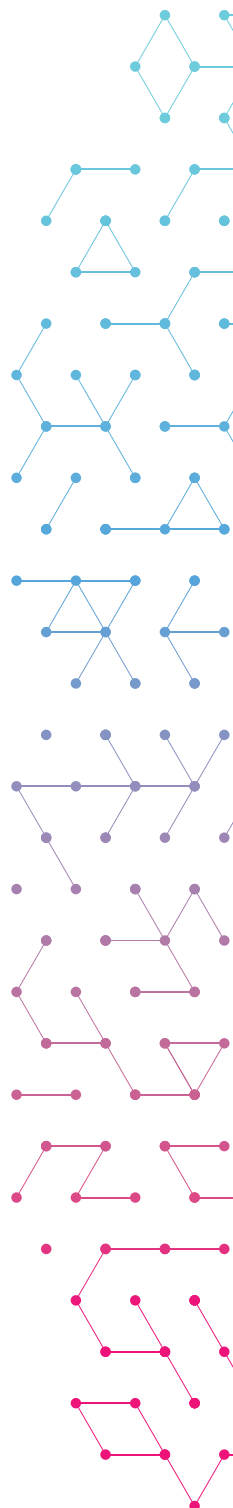
This allows industrial designers to innovate faster while achieving sustainability goals through material efficiency and lifecycle forecasting.

Simulation-driven ergonomics testing helps predict real-world performance, minimizing physical prototyping costs. For example, AI-based systems can simulate how users of different age groups handle a product, improving inclusivity in design outcomes.

3.2 UX/UI and Service Design

AI algorithms analyze real-time behavioral data to generate adaptive, context-aware interfaces. Personalization engines create user journeys that evolve dynamically with individual preferences.

Conversational interfaces, powered by large language models (LLMs), are redefining digital experience—providing intuitive, voice- or gesture-based interactions.



3.3 Design Research and Trend Analysis

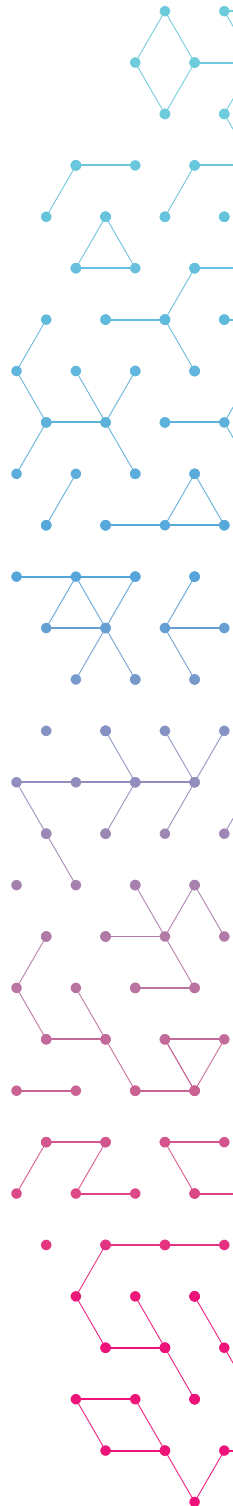
AI enables deep pattern recognition through natural language processing and visual analytics. Designers can identify emerging social patterns, aesthetic movements, and user frustrations from massive datasets across social media, reviews, and market reports. This accelerates decision-making and minimizes human bias in interpretation.

3.4 Creative and Content Design

Generative AI allows designers to produce concept art, storyboards, and campaign visuals at record speed. Instead of replacing the designer, it transforms them into creative directors of intelligence—orchestrating the intent, tone, and ethics of AI outputs. Maintaining authenticity, however, becomes paramount as AI-generated visuals blur the line between original and derivative.

3.5 Sustainable and Circular Design

Sustainability is a major beneficiary of AI adoption. Predictive analytics assist in lifecycle assessments, waste reduction, and resource optimization. AI-supported material databases can recommend sustainable alternatives, simulate degradation rates, and model carbon footprints—aligning with SDG 12 (Responsible Consumption and Production).



OPPORTUNITIES

for Designers and Organizations

AI's ability to combine logic, learning, and creativity opens pathways to greater efficiency, deeper insight, and democratized access to design. Key Opportunities:

1. Data-informed Creativity

Designers can convert data insights into emotionally resonant outcomes, balancing quantitative analysis with qualitative intuition.

2. Collaborative Co-creation

AI enables simultaneous prototyping, accelerating iteration cycles and allowing rapid exploration of multiple design directions.

3. Democratization of Design Tools

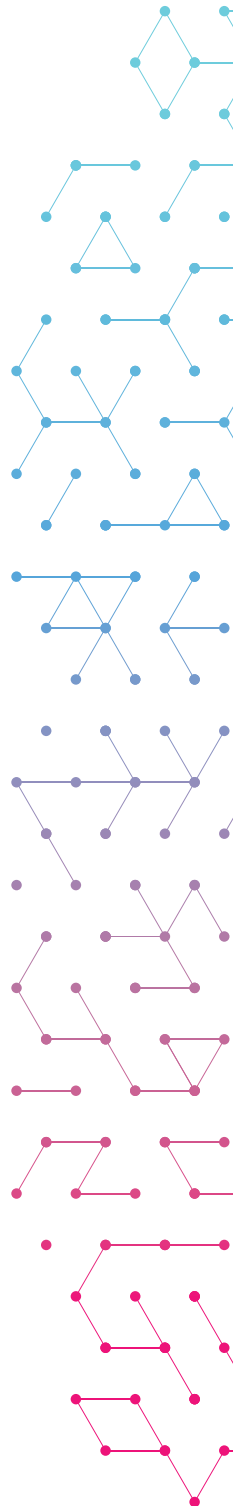
Freelancers and small studios can now leverage cloud-based AI tools, bridging the capacity gap between boutique and enterprise-scale firms.

4. Inclusive Design

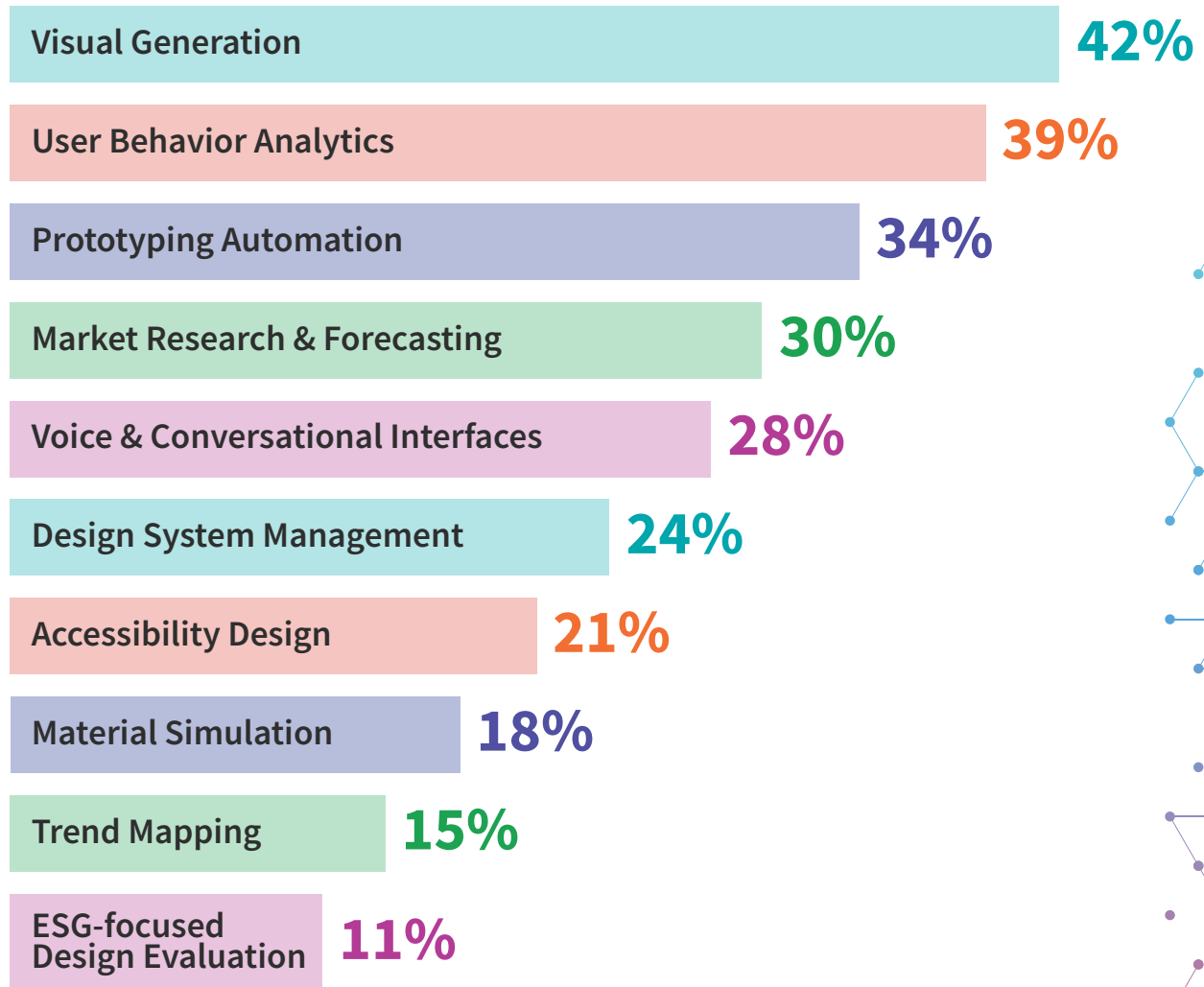
AI-powered vernacular processing and accessibility mapping ensure that design solutions reach diverse linguistic and physical demographics.

5. Design at Scale

Automated testing and intelligent content adaptation allow seamless deployment across varied user contexts and geographies.



Top 10 AI Applications in Design (2024)



(Data Source: Statista, Deloitte, CII analysis)

These numbers indicate a maturing ecosystem where AI not only aids creativity but also supports business decisions and sustainability goals.

CHALLENGES *and* *Ethical Considerations*

The integration of AI into design introduces a complex ethical terrain that must be navigated with transparency and accountability. Key Challenges:

1. Loss of Empathy

Excessive dependence on AI can erode the intuitive understanding of human emotion central to design.

2. Cultural Bias

AI systems trained predominantly on Western data sets risk marginalizing non-Western aesthetics and user contexts.

3. Ownership & Authenticity

The question of who owns AI-generated design—creator, coder, or algorithm—remains unresolved.

4. Creative Convergence

Overuse of similar models can result in homogenized aesthetics, stifling originality.

5. Data Ethics

Consent, privacy, and dataset provenance must be clarified to maintain user trust.

These challenges necessitate a policy framework that aligns AI design practices with human dignity and societal values.

Category	Ethical Practice	Non-Ethical Practice
Data Usage	Transparent user consent and documentation	Using unverified or scraped datasets
Creativity	AI as collaborator, human as director	AI as sole creator without attribution
Cultural Sensitivity	Contextual adaptation to region and identity	Perpetuation of cultural stereotypes
Design Authorship	Shared ownership recognition	Ambiguous or non-attributed creation
Evaluation	Inclusive, participatory testing	Algorithmic exclusion of minority users

AI IN DESIGN

EDUCATION *and*

Skill Development

The next frontier for design education is AI fluency—the ability to understand, guide, and ethically utilize intelligent systems. Globally, institutions such as MIT Media Lab, Royal College of Art (RCA), NID, and IITs are integrating modules on computational creativity, human–AI collaboration, and design ethics.

Core Skill Areas for Future Designers:

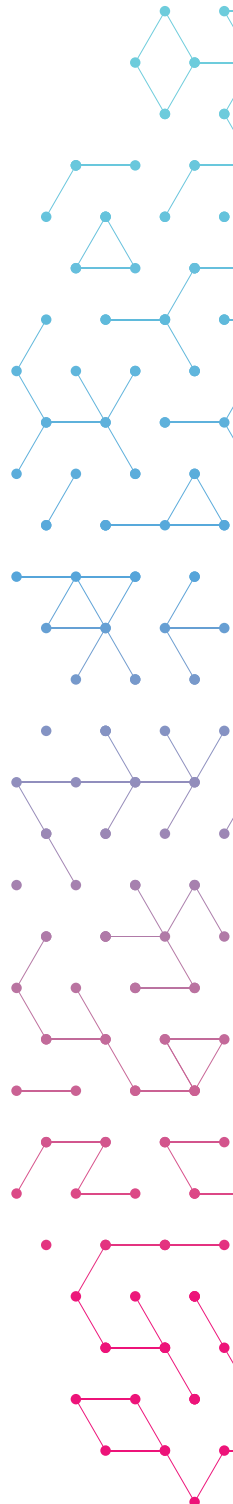
- Prompt Engineering and Creative Orchestration
- Data Interpretation & Visualization
- Human–AI Interaction and Interface Design
- Algorithmic Ethics and Transparency
- Systems Thinking for Design Policy

AI Skills Demand in the Design Job Market (2025)

Skill	Global Growth	India Growth
AI Literacy	62%	58%
Prompt Engineering	55%	61%
Data Visualization	44%	47%
Human-AI Interaction	40%	42%
Algorithmic Ethics	38%	36%

Source: LinkedIn Workforce Insights, 2025

Design educators must recognize that prompts are the new pixels—the medium through which designers articulate creative intent in AI environments.



FUTURE OF *AI-Enabled Design in India*

India is positioned to play a defining role in the AI-design revolution. Its diversity, linguistic plurality, and growing digital infrastructure present unmatched potential for developing culturally inclusive design intelligence. Emerging Trends:

1. Voice-First and Vernacular Design

AI-powered natural language interfaces in Hindi, Tamil, Bengali, and other regional languages democratize access.

2. Rural Design Access

Simplified AI-driven mobile interfaces can extend design literacy to rural innovators and artisans.

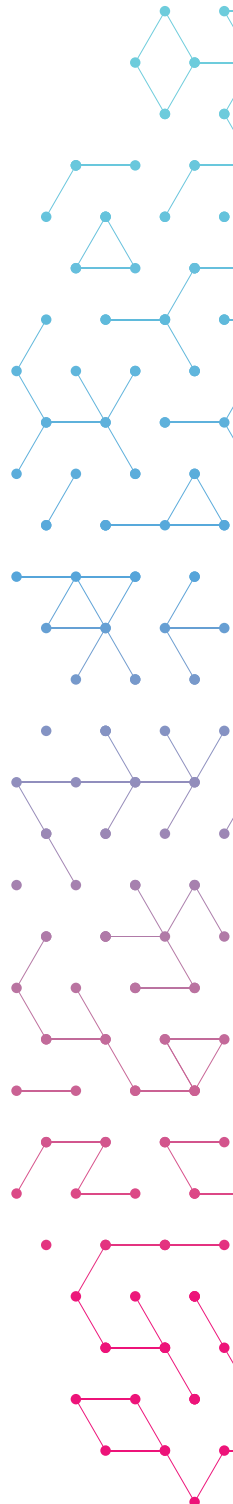
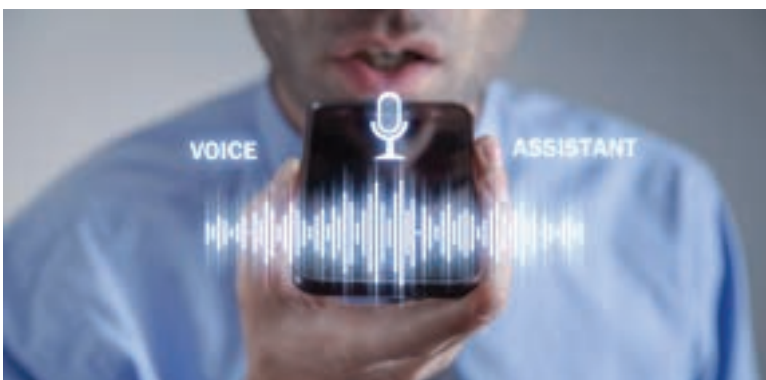
3. Craft and Heritage Preservation

Generative AI tools are digitizing traditional crafts and enabling virtual revival of dying art forms.

4. Urban Planning and Public Systems

AI simulations model crowd behavior, traffic, and environmental data to inform public design decisions.

India's distinct advantage lies in creating “humanized AI”—systems that reflect empathy, emotion, and diversity— unlike algorithmic systems built on homogeneous Western datasets.

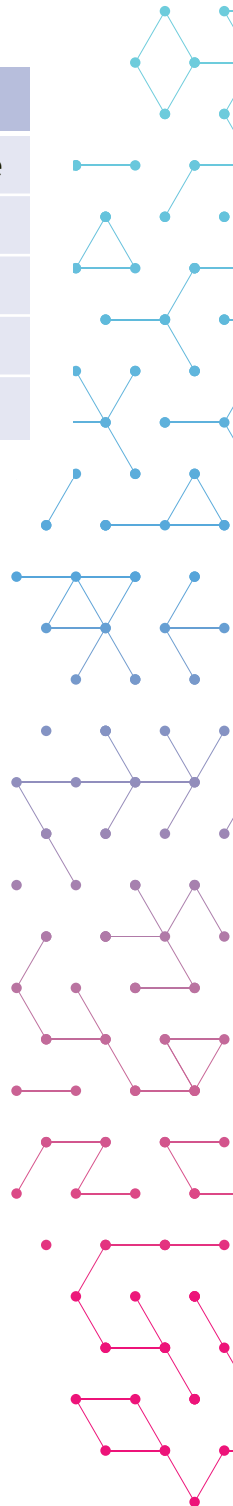
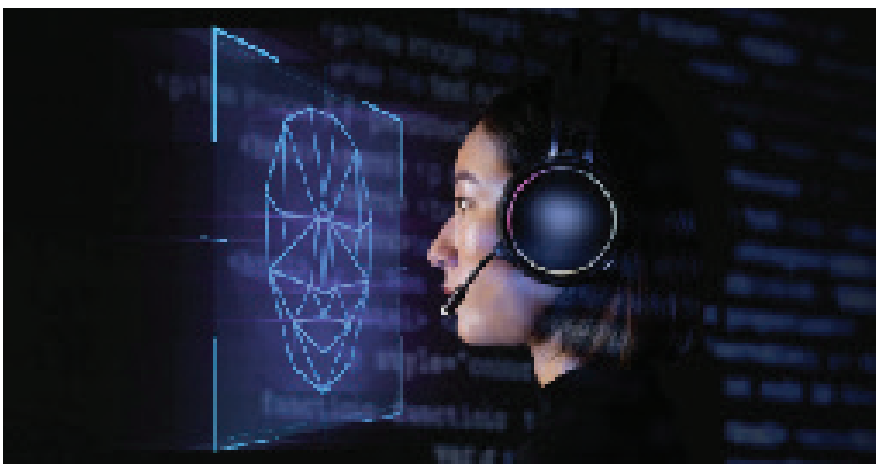


STRATEGIC RECOMMENDATIONS *for Advancing AI in Design*

Domain	Action Area	Expected Impact
Education	AI-integrated curriculum	Skilled, future-ready design workforce
Industry	Ethical co-creation systems	Responsible innovation and efficiency
Government	Policy and IP guidelines	Clarity on authorship and fair use
Society	Vernacular AI accessibility	Design equity and inclusion
Research	Human-AI evaluation metrics	Evidence-based innovation insights

Strategic Directions:

1. Position AI as a core design medium, not an auxiliary tool.
2. Develop AI literacy as essential competency across all design education levels.
3. Create Indian ethical standards for AI use in creativity.
4. Encourage cross-disciplinary partnerships between designers, engineers, and behavioral scientists.
5. Invest in vernacular AI models and culturally contextual datasets.
6. Promote academia-industry collaboration for AI-integrated live projects.
7. Reinforce human empathy as the foundation of all AI design systems.



GLOBAL SCENARIOS

of AI in Design

AI's role in design has evolved differently across regions, influenced by technology maturity, cultural priorities, and regulatory frameworks. Leading economies are investing in AI-driven design to achieve competitive advantage, while emerging nations are leveraging it to democratize creativity and local innovation. The following overview and recommendations present a global perspective that India can learn from and contribute to.

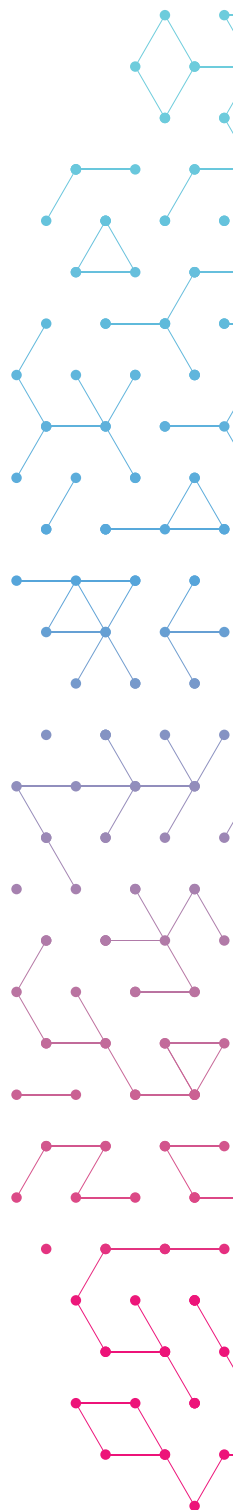
Global Overview

1. North America:

The US leads global innovation in generative design tools, with companies like Adobe, Autodesk, and OpenAI shaping real-time human–AI collaboration. Canada focuses on ethical and human-centered AI design, driven by institutions such as the Vector Institute and Mila, which emphasize inclusivity, transparency, and sustainability. Canadian design hubs like Toronto and Montreal are using AI for public good—from accessible UX systems to climate-resilient urban design. Mexico represents the Latin American frontier of AI democratization, where design schools and labs in Mexico City and Guadalajara employ open-source AI to empower local creators and preserve cultural heritage.

2. Europe:

Europe is at the forefront of responsible and human-centered AI design, prioritizing transparency, ethics, and inclusivity across creative sectors. The EU AI Act and European Design Agenda 2030 are shaping global standards for fairness and accountability in algorithmic creativity. Scandinavian nations champion AI for public value—using intelligent systems to enhance urban livability, environmental design, and accessibility. The UK and Germany are



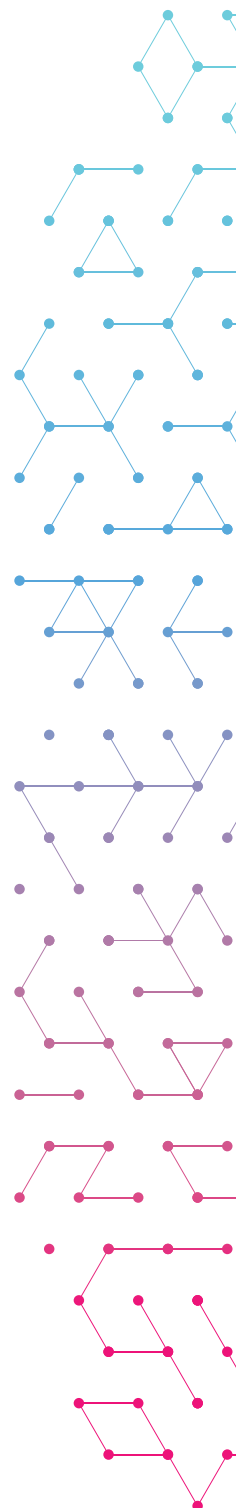
leading in AI-integrated product and interaction design, fostering collaboration between creative industries and research institutions. Meanwhile, design schools such as the RCA (London) and Aalto University (Finland) embed computational creativity, ethics, and sustainability in their curricula. Europe's strength lies in its ability to merge artistic sensibility with technological precision, ensuring that AI amplifies cultural identity, ecological responsibility, and social wellbeing rather than replacing human creativity.

3. Asia (East, Middle East, and India):

Asia is becoming the epicenter of AI-driven design innovation. Japan advances emotional design ("kansei AI") to interpret human sentiment, while South Korea integrates AI into fashion, mobility, and entertainment. China leads in AI-enabled industrial and interface design, embedding it into education and manufacturing ecosystems. The Middle East, particularly the UAE and Saudi Arabia, invests in AI-led design districts and cultural infrastructure under Vision 2030, blending heritage with sustainability. India's design ecosystem emphasizes inclusive and vernacular AI—leveraging its linguistic diversity and craft heritage to develop humanized, culturally rooted design intelligence. Together, these regions reflect a shift toward empathetic, ethical, and scalable AI design.

4. Africa and Latin America:

Across Africa and Latin America, AI in design drives social and developmental innovation. Open-source tools empower local creators, artisans, and students to address challenges in housing, healthcare, and climate adaptation. Countries like Kenya, South Africa, and Brazil use AI for sustainable urban planning, while Mexico and Colombia apply it to cultural preservation and education. The shared goal is to make AI a force for equity—bridging digital divides and amplifying indigenous creativity.



Key Recommendations

Based on global best practices and insights from this report, the following recommendations can guide the evolution of AI in design globally and locally:

1. Develop International AI-Design Alliances

Create cross-border collaborations between design councils, universities, and AI labs to share datasets, tools, and ethical frameworks.

2. Establish Global Design Ethics Standards

Advocate for a unified charter on AI ethics in design—covering authorship, cultural representation, data fairness, and environmental responsibility.

3. Invest in “Human-AI Co-Creation Labs”

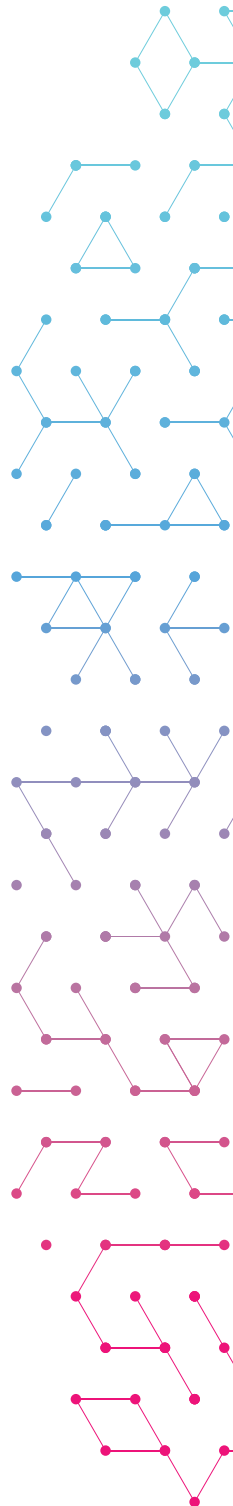
Encourage design institutions and creative studios worldwide to set up labs focused on hands-on human-AI collaboration, experimentation, and education.

4. Incentivize AI-Driven Sustainable Design

Offer grants or certifications for design projects that use AI to reduce waste, optimize materials, or extend product lifecycles.

5. Integrate AI in Design Education Globally

Make AI literacy, prompt engineering, and ethics mandatory in design curricula across regions—adapting content to local languages and contexts.



6. Promote Cultural and Linguistic Diversity in AI Models

Support dataset development in underrepresented languages, crafts, and visual traditions to avoid Western aesthetic bias.

7. Foster Open Innovation Platforms

Encourage open-source design-AI platforms that allow startups, students, and small creators to experiment affordably.

8. Implement Transparent Data and Attribution Protocols

Mandate provenance tracking for AI-generated outputs to ensure accountability and creative credit.

9. Develop Global AI-Design Metrics

Introduce measurable indicators (accuracy, diversity, carbon footprint, empathy quotient) for evaluating AI's creative and ethical performance.

10. Create AI Design Sandbox Environments

Governments can establish regulatory sandboxes for testing AI-generated design systems in a controlled, ethical manner.

11. Champion Women and Underrepresented Creators in AI Design

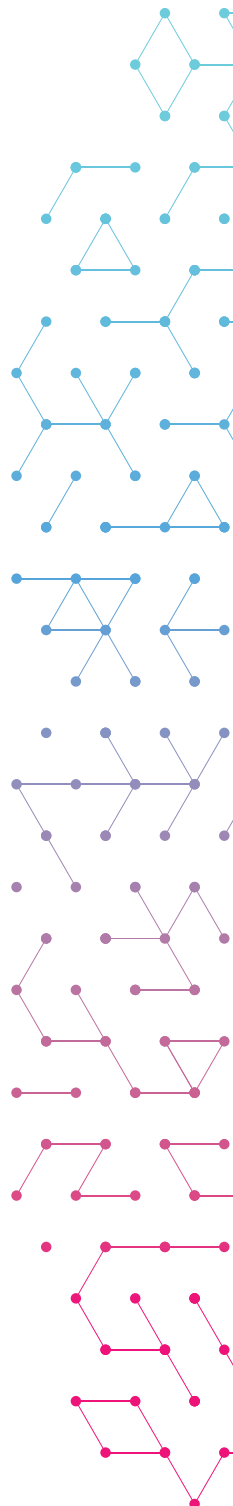
Promote diversity programs and mentorships that bring inclusive perspectives to AI-generated creativity.

12. Encourage Public-Private Partnerships (PPP)

Build collaborations between governments, tech firms, and design schools to accelerate research and real-world application of AI in creative industries.

13. Adopt AI for Heritage and Cultural Conservation

Use AI-driven reconstruction and digitization to preserve



traditional crafts, languages, and design archives globally.

14. Leverage AI for Social Design Impact

Apply AI in humanitarian design—urban resilience, disaster management, inclusive healthcare, and education solutions.

15. Enable Ethical IP and Copyright Mechanisms

Develop global copyright frameworks that recognize hybrid human–AI authorship while protecting creative rights.

16. Encourage “Design for AI Governance” Thinking

Designers should actively shape how AI interacts with society—through interface design, behavioral ethics, and policy visualization.

17. Integrate Emotional Intelligence in AI Systems

Draw from Japan’s “kansei design” approach to build empathetic, human-aware AI design frameworks.

18. Promote Global Design Hackathons on AI Futures

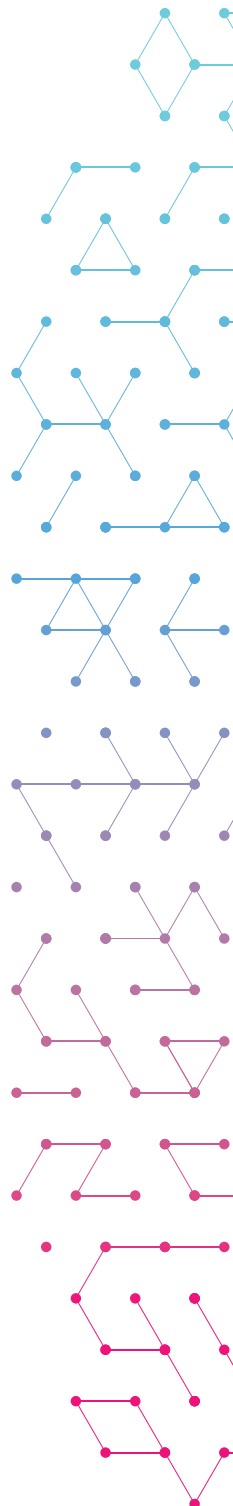
Annual international competitions can encourage students and professionals to prototype responsible AI-driven design solutions.

19. Establish a Global Observatory for AI in Design

A shared knowledge repository that tracks emerging tools, policies, and innovations can ensure equitable access to AI–design intelligence.

20. Advance AI–Design Diplomacy

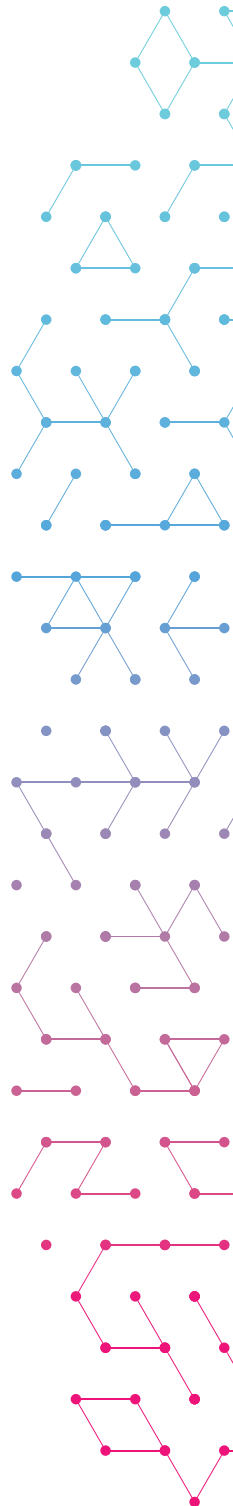
Position design as a soft-power tool in global technology dialogue—where AI reflects cultural diversity, not just computational precision.



CONCLUSION

AI is transforming the way we design, think, and innovate. Yet, its success depends on the human values that guide it. As technology learns to generate, designers must learn to discern—to filter intelligence through empathy, culture, and purpose.

India, with its diversity, creative depth, and growing technological ecosystem, has a rare opportunity to shape a globally relevant, ethically grounded AI-design paradigm. The goal is not to create machines that design like humans, but to enable humans who design with machines—more responsibly, inclusively, and imaginatively.







Confederation of Indian Industry

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering Industry, Government and civil society through advisory and consultative processes.

CII is a non-government, not-for-profit, industry-led and industry-managed organisation, with around 9,700 members from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 365,000 enterprises from 318 national and regional sectoral industry bodies.

For 130 years, CII has been engaged in shaping India's development journey and works proactively on transforming Indian Industry's engagement in national development. CII charts change by working closely with the Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness, and business opportunities for industry through a range of specialised services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

Through its dedicated Centres of Excellence and Industry competitiveness initiatives, promotion of innovation and technology adoption, and partnerships for sustainability, CII plays a transformative part in shaping the future of the nation. Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes across diverse domains, including affirmative action, livelihoods, diversity management, skill development, empowerment of women, and sustainable development, to name a few.

For 2025-26, CII has identified "Accelerating Competitiveness: Globalisation, Inclusivity, Sustainability, Trust" as its theme, prioritising five key pillars. During the year, CII will align its initiatives to drive strategic action aimed at enhancing India's competitiveness by promoting global engagement, inclusive growth, sustainable practices, and a foundation of trust.

With 70 offices, including 12 Centres of Excellence, in India, and 9 overseas offices in Australia, Egypt, Germany, Indonesia, Singapore, UAE, UK, and USA, as well as institutional partnerships with about 250 counterpart organisations in almost 100 countries, CII serves as a reference point for Indian industry and the international business community.

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