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The Strategic Competition for AI Supremacy: Ethical Norms and the Future of India–Usa Cooperation

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ABSTRACT

Artificial Intelligence (AI) has emerged as a strategic instrument of economic power, national security, technological leadership, and international influence. The competition for AI supremacy is consequently reshaping relations among major powers and creating new challenges for global ethical governance. India and the United States occupy complementary positions within this emerging technological order: the United States possesses substantial advantages in private AI investment, advanced computing infrastructure, and frontier-model development, while India offers a large talent pool, a growing digital ecosystem, and considerable opportunities for AI deployment. However, differences in regulatory priorities, data governance, technological dependence, and national security considerations complicate bilateral cooperation. This paper empirically examines the relationship between strategic competition and ethical governance in India–USA AI cooperation through secondary data, comparative policy analysis, and descriptive statistics. It analyses AI investment indicators, bilateral technology initiatives, and international ethical frameworks to assess the prospects for sustained cooperation. The findings suggest that strategic convergence provides a strong foundation for partnership, but technological asymmetry and the absence of sufficiently operationalised common ethical standards remain significant challenges. The paper argues that future cooperation should combine technological advancement with transparency, accountability, privacy protection, human oversight, and equitable access to AI capabilities.

Keywords: Artificial Intelligence, AI Supremacy, Ethics, International Relations, India–USA Cooperation, AI Governance, Strategic Competition.

INTRODUCTION

Artificial Intelligence is increasingly becoming a determinant of national power in the twenty-first century. Its applications in defence, intelligence, healthcare, finance, manufacturing, education, cybersecurity, and diplomatic decision-making have transformed technology from a predominantly economic resource into an instrument of strategic influence. Countries that possess advanced computing capabilities, high-quality data, skilled human resources, research infrastructure, and innovative enterprises are better positioned to shape the emerging technological order.

The competition for AI supremacy is not restricted to developing more powerful algorithms. It also involves controlling semiconductor supply chains, attracting research talent, financing technological innovation, establishing standards, and influencing the international rules governing AI development and deployment. Consequently, AI competition has become closely connected with economic statecraft, national security, and the distribution of global power.

The United States has established a strong position in AI research and private investment. India, meanwhile, possesses considerable potential through its information technology sector, scientific workforce, digital public infrastructure, and expanding domestic market. The relationship between these two countries is

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therefore strategically significant. Their cooperation can facilitate research, investment, computing infrastructure, innovation, and the development of AI applications for public welfare.

Nevertheless, technological cooperation raises important ethical questions. AI systems may reproduce social biases, compromise privacy, facilitate surveillance, generate misleading information, and intensify security risks. Furthermore, unequal access to computing resources and advanced models may create new forms of technological dependence.

The India–USA relationship provides an important case for examining whether strategic competition can coexist with ethical cooperation. The 2023 Initiative on Critical and Emerging Technology (iCET) established a framework for deeper collaboration in critical technologies. In February 2025, the two countries announced the Transforming the Relationship Utilizing Strategic Technology (TRUST) initiative, extending cooperation across AI, semiconductors, quantum technologies, biotechnology, and other strategic sectors. The initiative also identified AI infrastructure development as a major area of bilateral engagement (Government of India, 2025).

REVIEW OF LITERATURE

The existing literature on AI governance and international relations can be divided into three broad areas.

First, the technological competition literature emphasises the relationship between innovation, investment, and national power. The Stanford Institute for Human-Centered Artificial Intelligence's AI Index Report 2025 documents substantial differences in AI investment across countries. Such differences influence the ability of states to develop advanced models, establish computing infrastructure, and attract private-sector innovation (Stanford HAI, 2025).

Second, ethical governance scholarship emphasises that AI development must remain consistent with human rights, fairness, accountability, transparency, and privacy. UNESCO's Recommendation on the Ethics of Artificial Intelligence establishes a human-centred framework that connects technological development with human dignity, inclusion, safety, and environmental sustainability (UNESCO, 2021). The OECD AI Principles similarly emphasise trustworthy AI, transparency, robustness, and accountability (OECD, 2019).

Third, international technology policy increasingly recognises AI as an element of strategic cooperation and competition. The India–USA iCET framework and its subsequent evolution into TRUST demonstrate that technological partnerships are becoming central to bilateral diplomacy. These initiatives connect AI with semiconductors, defence technologies, research collaboration, supply-chain resilience, and investment.

However, an important research gap remains. Strategic partnership documents frequently express support for responsible innovation, but declarations of shared values do not necessarily establish common procedures for independent evaluation, cross-border accountability, incident reporting, or remedies for affected individuals. This paper addresses that gap by comparing measurable indicators of technological capacity with the institutional commitments and ethical requirements associated with bilateral cooperation.

Research Objectives

The study has four objectives:

- To examine the distribution of AI investment and technological capabilities relevant to India–USA cooperation.
- To analyse the role of strategic initiatives in strengthening bilateral AI collaboration.
- To identify the principal ethical and institutional challenges affecting cooperation.

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- To propose an empirically informed framework for combining technological competitiveness with responsible AI governance.

Research Questions and Hypothesis

The study addresses the following questions:

- How do differences in AI investment and technological capacity shape India–USA cooperation?
- To what extent do bilateral technology initiatives incorporate ethical governance considerations?
- Which institutional safeguards could reduce the risks associated with technological asymmetry?

Research hypothesis (H1): India–USA AI cooperation is more likely to be sustainable when strategic technology initiatives are accompanied by measurable ethical safeguards, transparent accountability mechanisms, and capacity-building arrangements.

The alternative hypothesis is that ethical safeguards have limited independent influence on cooperation compared with strategic and economic incentives. Because the study relies on documentary evidence and descriptive statistics rather than a large-N causal model, these hypotheses are assessed analytically rather than treated as statistically proven relationships.

RESEARCH METHODOLOGY

Research Design

The study adopts a descriptive and analytical research design based on secondary data. It combines quantitative analysis of published AI investment figures with qualitative examination of official bilateral statements and international ethical frameworks.

Data Sources and Period

The principal quantitative source is the Stanford HAI AI Index Report 2025, particularly its figures on cumulative private AI investment from 2013 to 2024. The qualitative material comprises the 2024 India–USA iCET joint fact sheet, the February 2025 India–USA joint statement announcing TRUST, UNESCO's 2021 AI ethics recommendation, and the OECD AI Principles.

The principal statistical comparison covers 2013–2024, while the policy analysis extends through February 2025. This distinction allows the study to compare established investment patterns with more recent strategic commitments.

Analytical Techniques

Three techniques are employed:

- **Descriptive statistical analysis:** comparison of published cumulative AI investment figures.
- **Comparative policy analysis:** examination of bilateral initiatives against selected ethical governance principles.
- **Thematic analysis:** identification of recurring issues involving technological asymmetry, privacy, accountability, security, and equitable access.

Scope and Limitations

The study does not claim to measure all dimensions of AI supremacy. Private investment is only one indicator of technological capability; it does not capture government expenditure, research quality, compute

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access, workforce skills, or the effectiveness of AI deployment. The documentary analysis also cannot establish a causal relationship between ethical safeguards and the actual performance of bilateral cooperation. The findings should therefore be interpreted as evidence-based analytical conclusions rather than results from a controlled causal investigation.

Empirical Analysis and Findings

Comparative Evidence on AI Investment

The Stanford HAI AI Index Report 2025 provides an empirical basis for comparing the investment environments of the United States and India. Its cumulative private AI investment estimates for 2013–2024 are presented below.

Table 1. Cumulative private AI investment, 2013–2024

Indicator	United States	India
Cumulative private AI investment	US$470.92 billion	US$11.29 billion
Investment as a percentage of the US figure	100%	Approximately 2.40%
Approximate investment ratio	41.7	1

Source: Stanford HAI (2025), AI Index Report, Chapter 4. Percentages and ratios calculated from the published figures.

The data reveal a substantial difference in private AI investment. The cumulative US figure is approximately 41.7 times the Indian figure. India's investment represents approximately 2.4% of the US total within this dataset.

This difference is strategically important for three reasons. First, the scale of investment influences the availability of computing infrastructure and the capacity to finance expensive AI research. Second, large investment pools can strengthen the ability of firms to attract specialised talent and commercialise advanced models. Third, differences in capital availability may influence the bargaining positions of partners negotiating access to technology, computing resources, and intellectual property.

However, these figures should not be interpreted as a complete measure of national AI capability. India may generate strategic value through software engineering, AI implementation, domain expertise, digital services, and applications adapted to local languages and public-service needs. Moreover, cumulative private investment does not measure the full contribution of government programmes or the wider economic benefits of AI adoption.

The evidence therefore supports a conclusion of **investment asymmetry**, rather than a conclusion that India lacks meaningful AI capabilities. The challenge for bilateral cooperation is to convert complementary strengths into shared value without allowing differences in capital and infrastructure to produce excessive dependence.

Evolution of Strategic Cooperation

The development of bilateral technology initiatives provides a second empirical indicator. The 2024 iCET joint fact sheet recorded cooperation across AI, semiconductors, advanced telecommunications, quantum technologies, biotechnology, and clean energy. It also linked technological collaboration with democratic values and universal human rights (Government of India and Government of the United States, 2024).

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In February 2025, the TRUST initiative broadened this approach. The joint statement identified AI infrastructure, investment, data centres, computing resources, processors, AI applications, and protection of sensitive technologies as areas requiring bilateral attention (Government of India, 2025).

Table 2. Policy development in India–USA technology cooperation

Dimension	iCET framework (2023–2024)	TRUST initiative (2025)
Strategic focus	Critical and emerging technologies	Broader strategic technology cooperation
AI cooperation	AI included within technology partnership	AI infrastructure and investment explicitly emphasised
Industrial dimension	Technology and supply-chain collaboration	Private-sector partnerships and infrastructure development
Security dimension	Secure and resilient technology cooperation	Protection of sensitive technologies and trusted vendors
Ethical relevance	Democratic values and human rights acknowledged	Responsible deployment remains relevant, but detailed common audit and accountability procedures require further development

Source: Government of India and Government of the United States (2024, 2025). The final column is an analytical assessment of the published commitments, not a claim that no other safeguards exist.

The comparison indicates a movement from a broad strategic technology framework towards more explicit attention to AI infrastructure and investment. This is significant because AI development depends not only on algorithms but also on access to processors, data centres, energy, connectivity, finance, and skilled personnel.

Nevertheless, the documents primarily establish strategic priorities and intentions. Their existence does not, by itself, demonstrate the volume of investment actually delivered, the number of joint AI systems deployed, or the effectiveness of ethical safeguards. These outcomes require separate monitoring through implementation data.

The evidence therefore establishes institutional commitment to cooperation, but not yet conclusive proof that cooperation has resolved the underlying challenges of technological asymmetry and ethical governance.

Strategic Competition and Technological Dependence

The investment gap identified in Table 1 has implications beyond commercial competition. Advanced AI infrastructure is costly, and access to leading processors and large-scale computing systems can influence the direction of research and the distribution of technological benefits.

For India, cooperation with US firms and research institutions could accelerate access to advanced computing, investment, technical expertise, and innovation networks. It could also support domestic AI applications in healthcare, agriculture, education, logistics, and public administration.

However, reliance on external infrastructure may create vulnerabilities if access depends on changing commercial terms, export restrictions, foreign platform decisions, or geopolitical tensions. Technological

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dependence can become a strategic concern when essential infrastructure cannot be substituted or independently maintained.

For the United States, India offers a large market, technical expertise, research talent, and opportunities for diversification of technology supply chains. Cooperation with India can broaden the international adoption of US-developed technologies while strengthening strategic links in the Indo-Pacific.

The relationship is therefore characterised by both complementarity and asymmetry. The United States has greater private AI investment in the cited dataset, whereas India offers distinct capabilities in implementation, services, and scalable applications. Sustainable cooperation requires arrangements through which India gains domestic capability and the United States obtains a reliable, innovative partner.

Ethical Norms as a Strategic Variable

Ethics should not be treated as a secondary concern that becomes relevant only after a technology has been developed. Ethical design affects public trust, regulatory acceptance, market access, and the legitimacy of international partnerships.

The UNESCO Recommendation on the Ethics of Artificial Intelligence emphasises human rights, proportionality, safety, privacy, diversity, and environmental responsibility (UNESCO, 2021). The OECD AI Principles provide complementary guidance on trustworthy AI, transparency, robustness, and accountability (OECD, 2019).

Applied to India–USA cooperation, these principles generate five practical requirements.

First, **privacy and data governance** must be addressed when AI systems use personal information across borders. The parties need clear arrangements regarding lawful data use, retention, access, security, and responsibility for breaches.

Second, **algorithmic fairness** is essential when systems influence recruitment, credit, healthcare, policing, or public-service delivery. Models trained on limited or unrepresentative data may generate outcomes that disadvantage particular groups or linguistic communities.

Third, **transparency and accountability** require appropriate documentation, independent evaluation, traceability, and procedures for reporting failures. Commercial confidentiality may legitimately protect some information, but it should not eliminate accountability for consequential harms.

Fourth, **human oversight** is particularly important in defence, intelligence, and other high-stakes applications. AI-generated recommendations should not automatically replace meaningful human responsibility for decisions involving life, liberty, or fundamental rights.

Fifth, **equitable access and capacity-building** should ensure that cooperation does not benefit only large technology companies. Universities, smaller enterprises, public institutions, and researchers in both countries need opportunities to participate. These requirements can strengthen rather than weaken strategic cooperation. Shared minimum standards can reduce uncertainty for firms, improve interoperability, and increase public confidence. Ethical governance may therefore function as an enabling condition for technological cooperation rather than merely a regulatory cost.

Assessment of the Research Hypothesis

The empirical evidence offers qualified support for H1.

The investment figures establish a substantial difference in private AI investment, while the bilateral policy documents demonstrate a growing commitment to strategic technology cooperation. International ethical frameworks provide recognised principles that could guide common safeguards.

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Taken together, these findings suggest that cooperation needs more than political declarations and commercial investment. Where partners differ in resources, common procedures for accountability, risk assessment, and capacity-building may help prevent technological asymmetry from becoming institutional dependence.

However, the evidence does not establish statistically that ethical safeguards independently increase the durability or success of bilateral cooperation. The hypothesis is therefore **analytically supported but not causally proven**. Future research using project-level data, expert interviews, or longitudinal indicators would be necessary to estimate the actual effects of ethical governance on bilateral outcomes.

Major Challenges to Future Cooperation

Four challenges emerge from the analysis.

Regulatory divergence: Different approaches to privacy, innovation, liability, and security may complicate the development of interoperable AI systems.

Unequal technological capacity: Differences in capital and computing infrastructure may influence control over research priorities, intellectual property, and commercial benefits.

National security concerns: Cooperation in defence and dual-use technologies requires protection against misuse, cyberattacks, unauthorised access, and risks arising from autonomous systems.

Implementation deficits: Ethical principles may remain symbolic unless translated into measurable standards, audit procedures, incident-reporting systems, and clearly assigned responsibilities.

Addressing these challenges requires a flexible framework that protects legitimate national interests while establishing common minimum expectations for safety and accountability.

Policy Recommendations

Establish a Bilateral AI Ethics and Safety Framework

India and the United States should develop common minimum requirements for high-impact AI systems. These should cover risk classification, pre-deployment evaluation, bias testing, cybersecurity, documentation, and incident reporting. The framework should build upon internationally recognised principles rather than assume that both countries must adopt identical regulatory systems.

Promote Reciprocal Research and Infrastructure Access

Bilateral partnerships should support joint research laboratories, university collaborations, computing access, researcher exchanges, and transparent arrangements for intellectual property. Cooperation should strengthen India's domestic capacity while providing US institutions with access to Indian expertise and innovation.

Protect Human Rights in High-Stakes Applications

AI systems used in defence, law enforcement, intelligence, and essential public services should be subject to context-appropriate human oversight and independent review. Decisions with serious consequences should include procedures for review, correction, and accountability.

Create an AI Cooperation Monitoring Dashboard

The two countries should publish periodic indicators covering joint research projects, infrastructure investment, research exchanges, AI safety assessments, reported incidents, and participation by smaller

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enterprises and academic institutions. Such a dashboard would make it possible to distinguish announced commitments from implemented outcomes.

Encourage Inclusive and Sustainable AI Development

Cooperation should include AI applications for agriculture, healthcare, climate resilience, education, and accessibility. Energy consumption, data-centre sustainability, language inclusion, and the needs of underserved communities should form part of project evaluation.

CONCLUSION

The strategic competition for AI supremacy is reshaping international relations by linking technological innovation with national security, economic influence, and global rule-making. India and the United States possess complementary capabilities, but the empirical evidence reveals an important asymmetry in cumulative private AI investment. Their evolving technology partnership offers opportunities to combine US investment and infrastructure with Indian talent, implementation capacity, and domestic application needs.

The analysis of iCET and TRUST demonstrates that AI cooperation has become an explicit component of bilateral strategic engagement. However, policy declarations alone cannot establish whether cooperation is equitable, safe, or institutionally sustainable. The principal challenge is to translate strategic commitments and internationally recognised ethical principles into measurable operational practices.

The study finds qualified analytical support for the proposition that ethical safeguards can strengthen the foundations of bilateral cooperation. This conclusion should not be mistaken for a statistically established causal relationship. Further empirical investigation is needed to evaluate project-level outcomes and the implementation of agreed safeguards.

Ultimately, AI leadership should not be measured exclusively by investment, computing power, or model performance. It should also be assessed through the capacity to develop trustworthy systems, protect human rights, distribute benefits fairly, and manage technological risks responsibly. If India and the United States integrate these objectives into their strategic partnership, they can contribute to an international technological order in which competition encourages innovation without displacing ethical responsibility.

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