Science & Technology · GS - III

How can indigenous artificial intelligence foundation models contribute to India's technological sovereignty? Discuss their potential applications, challenges and the safeguards required for responsible deployment.

EXAM YEAR	PAPER	SUBJECT
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MARKS	WORD LIMIT
10	~150 words

Answer Hint

technological sovereignty; indigenous foundation models; Indian-language accessibility; data privacy; strategic autonomy; computational infrastructure; bias and accountability

Model Answer

Introduction

Indigenous AI foundation models can strengthen India's technological sovereignty by developing AI capabilities suited to its languages, institutions and socioeconomic needs.

Potential Benefits

Models supporting Indian languages can improve access to digital services, education, healthcare and financial inclusion. Lightweight, on-device models may enable offline applications and reduce the need to transmit sensitive information to cloud servers. Indigenous capabilities can also support research, public administration and strategic sectors.

Key Challenges

Developing competitive models requires high-quality datasets, advanced computing infrastructure, skilled researchers and sustained investment. Risks include algorithmic bias, inaccurate outputs, cybersecurity

vulnerabilities, intellectual-property disputes and dependence on imported hardware. Indigenous development alone does not guarantee accuracy or privacy.

Way Forward

India should promote transparent evaluation, representative Indian-language datasets, privacy-by-design, cybersecurity testing and independent audits. Open research, public–private partnerships and affordable computing access can strengthen innovation. High-risk applications should incorporate human oversight, accountability and appropriate legal safeguards.

Conclusion

Indigenous foundation models can make India's AI ecosystem more resilient and inclusive. Their success will depend not merely on domestic ownership, but also on reliability, responsible governance, accessibility and practical performance.

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