Use of Artificial Intelligence in Promoting Bharatiya Bhasha

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ABSTRACT:

India's linguistic heritage is among the richest in the world, with over 121 languages and 1,600 dialects. Yet, many Bharatiya Bhasha face significant challenges, including reduced usage in professional spheres, limited digital resources, and a declining rate of intergenerational transmission. In this era of digital transformation, language is a critical determinant of inclusive access to technology, education, and governance. Artificial Intelligence (AI) has emerged as a transformative tool to support and preserve these languages through advancements in Natural Language Processing (NLP), speech recognition, and machine translation.

This paper examines how AI-driven initiatives, such as the government-backed Bhashini platform, are leveraging large-scale data collection to enable real-time translation and voice-based services in 22 scheduled languages. Key applications discussed include automated grammar correction, digitization of ancient manuscripts through Optical Character Recognition (OCR), and the creation of adaptive language-learning platforms that align with the National Education Policy (NEP) 2020.

However, the path to a multilingual digital future is hindered by substantial barriers: scarcity of clean datasets for low-resource languages, inherent data biases, and the persistent rural-urban digital divide. Furthermore, the study addresses ethical considerations regarding cultural sensitivity and the risk of linguistic homogenization. By analyzing current technological trends and policy frameworks, this paper highlights future opportunities for sustainable linguistic development, arguing that a collaborative approach between developers, linguists, and policymakers is essential to ensure technology acts as a bridge

rather than a barrier to India's cultural heritage.

KEYWORDS:

Artificial Intelligence, Bharatiya Bhasha, Indian Languages, NLP, Language Promotion.

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1. Introduction

India is a multilingual and multicultural nation where language forms the foundation of identity, culture, and knowledge systems. According to linguistic surveys, India has hundreds of languages and thousands of dialects spoken across its regions. While 22 languages are officially recognized, many others remain underrepresented in formal education, administration, and digital platforms.

The rapid growth of information technology has largely favored English and a few dominant languages, resulting in a digital divide that affects non-English speakers. This imbalance restricts access to information, public services, and economic opportunities for a large segment of the population. Promoting Bharatiya Bhasha in the digital domain has therefore become essential for inclusive national development.

Artificial Intelligence offers innovative solutions to this challenge. By enabling machines to understand, interpret, and generate human languages, AI provides tools that can support Indian languages in technology-driven environments. This paper explores how AI contributes to the promotion of Bharatiya Bhasha and evaluates its potential impact on society.

2. Artificial Intelligence and Language Processing

Artificial Intelligence refers to the simulation of human intelligence in machines that are capable of learning, reasoning, and problem-solving. In the context of language, AI relies heavily on Natural Language Processing (NLP), a field that allows computers to process and analyze human language data.

Key components of AI–based language processing include:

- Text analysis and understanding

- Speech recognition

- Language generation

- Contextual interpretation

Indian languages present unique challenges such as complex grammar, rich morphology, multiple scripts, and regional variations. AI models designed for Bharatiya Bhasha must therefore be trained using diverse and representative language data. Despite these challenges, advancements in machine learning and deep learning have significantly improved the performance of AI systems for Indian languages.

3. Role of AI in Promoting Bharatiya Bhasha

3.1 Machine Translation

Machine translation is one of the most significant applications of AI for language promotion. AI–based translation systems allow content to be converted between English and various Bharatiya Bhasha.

This technology enables:

- Access to government information in regional languages

- Translation of educational and technical material

- Wider circulation of regional literature and research

By reducing language barriers, machine translation supports linguistic equality and encourages the use of Bharatiya Bhasha in digital communication.

3.2 Speech Recognition and Voice Technology

Speech–based AI systems allow users to interact with technology through spoken language. Speech–to–text and text–to–speech systems now support several Indian languages, making

digital platforms more accessible.

Voice technology is particularly beneficial for:

· Rural populations

· Elderly users

· People with limited literacy

By allowing communication in native languages, AI voice systems promote greater participation in the digital ecosystem.

3.3 AI in Education

Education in the mother tongue has been proven to improve learning outcomes. AI–powered educational platforms enable students to learn in Bharatiya Bhasha through interactive content, personalized learning paths, and intelligent feedback mechanisms.

Applications include:

· Language learning apps

· Virtual tutors

· Automated evaluation systems

AI also assists teachers by reducing administrative workload and providing insights into student performance, thereby improving the overall quality of education in regional languages.

3.4 Digital Governance and Public Services

AI plays a vital role in making governance more inclusive by supporting multilingual digital platforms. Government portals, chatbots, and helplines powered by AI enable citizens to access public services in their preferred Bharatiya Bhasha.

This results in:

· Improved transparency

· Better citizen engagement

- Enhanced trust in digital governance

Multilingual AI systems ensure that language does not become a barrier to accessing rights and services.

3.5 Preservation of Endangered Languages

Several Indian languages are at risk of extinction due to limited documentation and declining usage. AI helps preserve these languages by enabling digital recording, transcription, and archiving of linguistic data.

AI-driven tools assist linguists in:

- Creating digital dictionaries
- Documenting oral traditions
- Analyzing linguistic patterns

Such efforts contribute to safeguarding India's intangible cultural heritage.

4. Social and Cultural Impact

The promotion of Bharatiya Bhasha through AI has a significant social and cultural impact. Language is closely linked to identity, and the use of native languages in technology strengthens cultural confidence and self-expression.

AI enables:

- Cultural inclusion
- Intergenerational language transfer
- Revival of interest in regional literature

By integrating Bharatiya Bhasha into modern technology, AI bridges the gap between tradition and innovation.

5. Challenges in AI Adoption for Bharatiya Bhasha

Despite its potential, AI-based language promotion faces several challenges:

· Limited availability of high–quality language datasets

· Diversity of dialects and scripts

· Technical complexity of Indian languages

· Unequal focus on major languages

Addressing these issues requires policy support, research funding, and collaboration among stakeholders.

6. Future Scope and Opportunities

The future of AI in promoting Bharatiya Bhasha is promising. With increased investment and innovation, AI can:

· Support real–time multilingual communication

· Strengthen mother–tongue education

· Encourage local content creation

· Promote linguistic equality in technology

National initiatives, academic research, and open–source platforms will play a crucial role in shaping this future.

7. Conclusion

Artificial Intelligence has the potential to transform the way Bharatiya Bhasha are used, preserved, and promoted in the digital age. By enabling translation, speech processing, education, governance, and preservation, AI supports linguistic inclusivity and cultural sustainability. While challenges remain, strategic and ethical use of AI can ensure that Indian languages continue to thrive alongside technological progress.

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