Generative AI: Challenges and Opportunities in the Context of India

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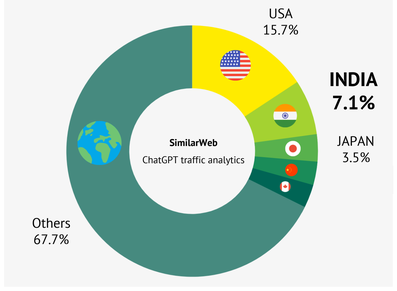
Generative AI at the Frontier of AI

ChatGPT | Stable Diffusion | Midjourney

- **Large-scale Language Models** (LLMs) and **Text-to-Image models** can generate highly realistic and human-like content
- Revolutionized our work, communication, and artistic expression

Cross-cultural Access and Challenges



- ChatGPT, developed by US-based OpenAI, receives **over 80%** of its traffic from **outside the United States**.
- **India** is the **second highest** user base.

- The **cultural values, beliefs, and worldviews** of users may **differ significantly from those of the AI developers.**
- **Cross-cultural disparity** can pose challenges of performance & adequacy of GenAI tools in **diverse cultural contexts**.

Motivation: Why studying the challenges in the Indian context is important?

- **Remarkable cultural diversity and heterogeneity** to test GenAI for diverse cultural contexts.
- **The second largest consumer base** for GenAI with potential for significant growth.
- Can provide a **framework** to tackle similar challenges **for other cultures**.

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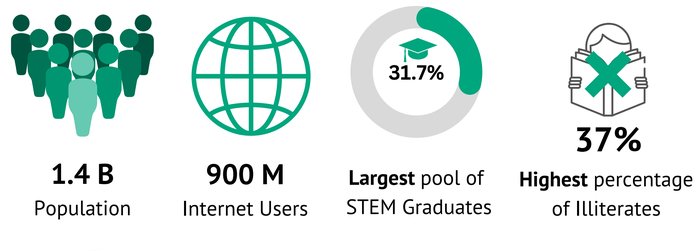
Unique Characteristics of Indian Society



- **Large population**: the most populous country in the world [1].
- **Religious, linguistic, and cultural diversity**: Home to hundreds of religions, 121 languages, 1600 dialects, & 86 scripts [2].
- **Economic diversity**: Considerable variation in income and living standards across the country.
- **Educational diversity**: India has both the largest pool of STEM graduates [3] and the highest illiteracy at the same time [4].
- **Family and community**: Significant portion of the young population live with their families, often spanning three generations with **life experiences shared across the generations**.

References

[1] Department of Economic and Social Affairs, United Nations, "World Population Prospects," 2022, [Online; accessed 17-Apr-2023].

[2] Office of the Registrar General & Census Commissioner, India, "Population census 2011: Table C-16: Language (India & States/UTs)," 2011, [Online; accessed 17-Apr-2023].

[3] World Economic Forum, "The human capital report 2016: Insight report," 2016, [Online; accessed 17-Apr-2023].

[4] The EFA Global Monitoring Report team, UNESCO, "The education for all global monitoring report: Summary," 2014, [Online; accessed 17-Apr-2023].

[5] N. Gillespie, S. Lockey, C. Curtis, J. Pool, and A. Akbari, "Trust in artificial intelligence: A global study." The University of Queensland and KPMG Australia, 2023, [Online; accessed 17-Apr-2023].

Challenges

Linguistic freedom and language imposition

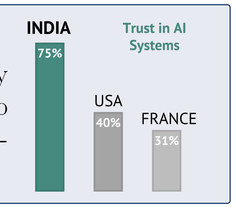
Limitations of current GenAI tools pose new challenges of accessibility and usability for a large proportion of Indian population with little or no literacy in written languages.

Misrepresentation of cultural iconography

Many Indian communities are poorly represented in the training data collected from centralized, online sources resulting in inaccurate representations of their cultural iconography by GenAI models.

Higher trust in the AI systems [5]

Users from emerging economies put significantly high trust in AI generated content as compared to their Western counterparts; posing a challenge of reliability.



Unwarranted centralization

The growing trend of centralized AI development with one entity developing the technology is fundamentally at loggerheads with the operating principles of Indian knowledge systems.

Research Directions

Conclusion

- Outlined the **unique characteristics of Indian society** that can influence the adaptation of GenAI in India.
- **Discussed potential challenges** in the development and deployment of GenAI in India
- **Proposed new avenues for research** and model designs