

AI and Women: Unravelling the Impact on Gender

SANKHYA (संख्या)

“There cannot be a good plan for economic progress without adequate data and there cannot be adequate data without a good plan for collecting them...”

P.C Mahalanobis, Member, First Planning Commission of India & Scientist

AI – GROWTH & POTENTIAL

The increasing adoption of Artificial Intelligence (AI) globally has revolutionised industries, workforce and the society at large. From health to education, automotive to defence, and law to the banking sector, AI systems, especially Generative AI (GenAI) models, have transformed the way the world operates.

As per the State of AI in 2022 Report published by McKinsey, the Global AI adoption rate has increased from 20% in 2017 to 50% in 2022.

Reportedly, AI is expected to contribute USD 5.7 trillion to the global economy by 2030, with the potential to add USD 957 billion to India's economy by 2035.

Within the realm of AI, Gen AI has undergone substantial growth in the past year, with over 60% of organizations incorporating AI now utilizing Gen AI tools

As per a 2017 study published by Accenture, three sectors namely, Information & Communication (4.8%), Manufacturing (4.4%) and Financial Services (4.3%) are estimated to witness the highest GVA growth rates amounting to USD 6 trillion by 2035 due to AI.

Potential of AI as a Tool for Gender Equality

Foster fairness and objectivity in decision-making

- AI relies on data driven algorithms which are objective and fair, and not marred by societal discrimination or prejudices.

Bias Mitigation

- Reliance on objective data and minimizing human intervention can help reduce gender bias and promote fair treatment across sectors.

Promoting Diversity and Inclusion

- Employing AI-powered tools for recruitment can help improve gender representation in the workforce.

Eliminate the gender gap in education

- AI-enabled education tools can provide personalised learning experiences, addressing specific gender based learning gaps through intelligent tutoring systems.

Financial Inclusion

- AI-driven financial services can promote economic empowerment by facilitating access to credit and financial resources for women entrepreneurs and underserved communities.



INSTANCES AND IMPACT OF AI USE ON GENDER

STEM and Leadership Imagery



- UNDP Accelerator Lab conducted an experiment asking GenAI Models (DALL-E 2 and Stable Diffusion) to draw the portrait of STEM professionals and between 75%-100% of the results portrayed male STEM professionals.
- In a different study on visual generative AIs, it was found that women were not represented in response to the prompt 'CEO,' but images of female bosses emerged for the prompt 'bad leaders.'

AI Recruitment Biases



In 2015, Amazon tested an AI Recruitment Tool designed to screen resumes. The AI tool was trained on 50,000 terms from a decade of Amazon resumes. The AI, learning from historical patterns, exhibited a bias favoring male candidates, penalizing resumes containing terms associated with 'women' (e.g., all-women college, women's chess club captain).

Targeted Victimization through Deepfakes



A 2019 Study by Deeprace Labs revealed that women are primary targets/ victims of deepfake pornography. It was found that out of 15,000 deepfake videos online, over 96% were non-consensual pornographic content with swapped-in faces of women.

Gendered Virtual Voices



- All major Virtual Personal Assistants (VPAs) including Apple's Siri (later added an optional male voice), Amazon's Alexa, Microsoft's Cortana, Samsung's Bixby and Google Assistant were all programmed with female voices.
- UNESCO's 2019 Report noted that such VPAs perpetuate harmful stereotypes of women as submissive and subservient.

Gender Bias in Credit Assessment

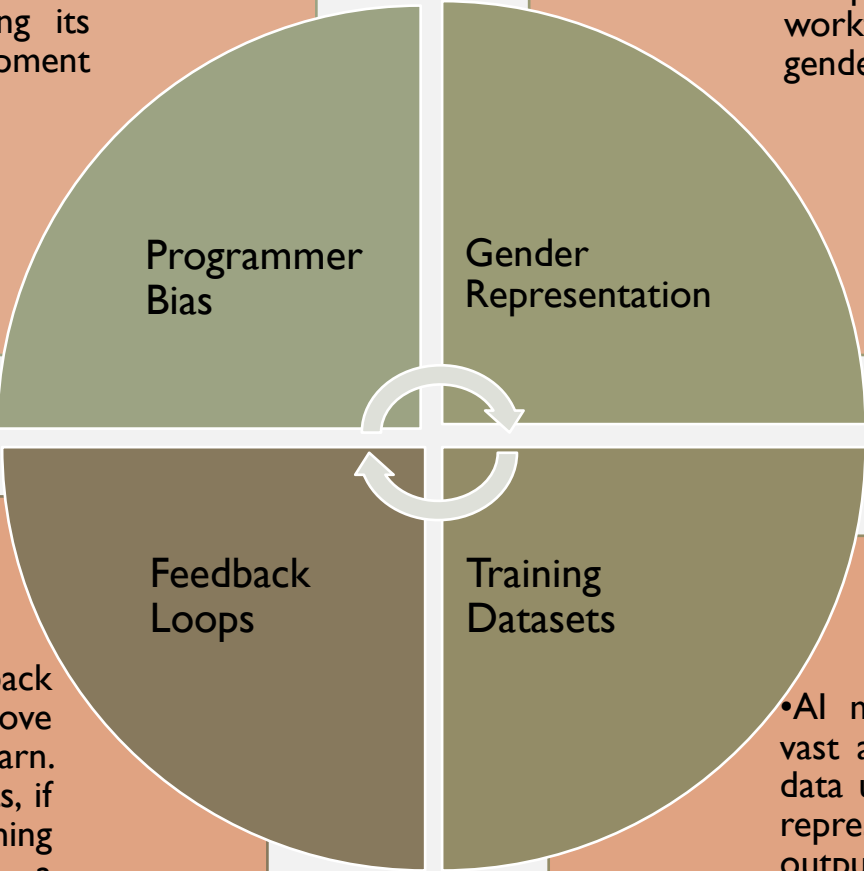


In 2019, the credit card application algorithm employed by Apple and Goldman Sachs appeared to grant smaller credit lines to women compared to men despite the absence of explicit gender inputs in the model.

UNDERSTANDING GENDER BIAS IN AI: KEY CONTRIBUTORS AND TRENDS

- The conscious or unconscious bias of the programmer can influence the AI model during its design and development process.

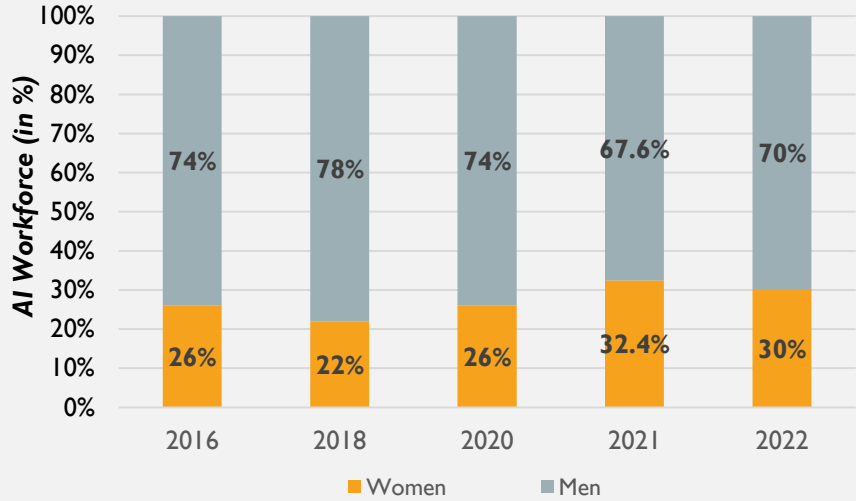
- The underrepresentation of women in tech disciplines and the AI workforce contributes to gender bias in AI systems.



- AI relies on feedback loops to improve accuracy and relearn. Existing biased results, if used as new training data, can create a regressive feedback loop resulting in reinstating and amplifying gender bias.

- AI models are trained on vast amounts of data. If the data used for training is not representative/ diverse, the outputs/ predictions generated may inherit or magnify the biases present in training data.

AI Workforce and Gender Representation (2016-2022)



Source: World Economic Forum Gender Gap Reports (2018-2023)

The WEF Gender Gap Report indicates a modest increase in female representation in the AI workforce, rising from 26% in 2016 to 30% in 2022.

Nevertheless, the progress highlights a continued disparity, emphasizing the need for further initiatives to achieve gender equality in the field.

Increased representation of women in AI workplace is crucial to reduce faceless discrimination and narrow the gender gap between men and women.

POLICY SUGGESTIONS

Regulatory Framework for AI Governance

It is recommended that a comprehensive regulatory framework for AI be instituted to effectively address and mitigate the diverse risks associated with its deployment. Specific obligations may be imposed on AI developers to eliminate biases in algorithmic designs and datasets.

Ethical Impact Assessment for AI systems

It is recommended that an Ethical Impact Assessment must be made mandatory for AI systems. The assessment should take place during the developmental stages, serving as a proactive measure to identify and address any potential gender biases embedded within the system.

Sandboxes for AI Testing

Dedicated sandboxes may be established to ensure comprehensive testing for new AI products before their release. This practice may be made mandatory, especially for products that can significantly impact human rights and business. This shall help the general public safeguard against unethical or discriminatory behaviour by the AI system and promote responsible innovation.

Establishment of Diverse Hiring Practices

Representation plays a key role in the mitigation of adverse effects of AI. Therefore, organizations may be incentivized to adopt inclusive recruitment strategies, actively seeking and hiring individuals from diverse backgrounds. Additionally, regular monitoring and reporting of diversity metrics can act as a valuable tool to identify areas for improvement, promoting ongoing efforts to create a more inclusive and diverse AI workforce.

Human Oversight in AI System

It is pertinent to ensure that human decision-making is an indispensable and guiding element within artificial intelligence systems, fostering a collaborative and responsible relationship between AI and its human stakeholders. Lack of it can result in potential divergence from ethical considerations, diminished accountability, and an increased risk of unintended consequences.

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Sankhya* is an initiative of Bridge Policy Think Tank to create interface snapshots in statistics and policy analysis while promoting critical thinking and analysis.

* Sankhya means numbers and is also a school of rationalist Indian philosophy. According to Sankhya philosophy reliable knowledge comes from only three pramanas (proofs)- pratyakṣa ('perception'), anumāṇa ('inference') and śabda (āptavacana, meaning, 'word/testimony of reliable sources').