

The Hindu Important News Articles & Editorial For UPSC CSE

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Mission Mausam is a ₹2,000-crore initiative by the Ministry of Earth Sciences to upgrade India's weather forecasting capabilities, including installing new radars and advanced weather instruments.

- It also aims to enhance research on cloud simulation and weather modification techniques like cloud seeding.

Mission Mausam:

- Objective:** To upgrade India's weather forecasting infrastructure and enhance understanding of weather modification techniques.
- Budget:** ₹2,000 crore, cleared by the Cabinet.
- Nodal Body:** Ministry of Earth Sciences (MoES).
- Duration:** First tranche until 2026.
- Key Equipment:** Plans to install up to 60 weather radars, 15 wind profilers, and 15 radiosondes for monitoring atmospheric conditions.
- Cloud Simulation:** A cloud-simulation chamber will be set up at the Indian Institute of Tropical Meteorology, Pune, to improve rain-cloud modelling.
- Weather Modification:** The mission aims to conduct research on cloud-seeding and reducing lightning risk by modifying clouds.
- Radar Infrastructure:** India currently has 39 weather radars (1 for every 432 km) compared to 160 in the U.S. (1 for every 154 km), highlighting the need for expansion.
- Significance:** Improved data collection for more accurate weather forecasts and potential future weather interventions.

'Mission Mausam' to boost radar network to seed, tweak clouds

Jacob Koshy
NEW DELHI

The ₹2,000-crore Mission Mausam that the Cabinet cleared on Wednesday involves a major upgrade of the forecasting infrastructure as well as funding research into better understanding weather modification.

In the first tranche of the mission until 2026, the Ministry of Earth Sciences, the nodal body executing the exercise, hopes to procure and install up to 60 weather radars, 15 wind profilers, and 15 radiosondes. These are instruments that can give regular update on the changing parameters of wind speeds, atmospheric pressure, humidity, temperature at various elevations of the atmosphere. More such data can mean more accurate and precise rain-forecasts.

"We will also be setting up a cloud-simulation chamber at the Indian Institute of Tropical Meteorology, Pune. This will in the years to come help us model rain clouds with great precision," M. Ravichandran, Secretary, MoES, said at a press conference on Thursday.

Doing so would enable future "weather interven-



M. Ravichandran

tions" such as seeding clouds and tweaking them to control the rainfall from them. "Suppressing rainfall from a dense cloud is easier than increasing rainfall. There are some experiments globally to modify clouds and make them less prone to lightning. So we hope to be able to conduct such experiments, understand the physics with more precision and build on this knowledge," he added.

India's size and geographical variability means that the weather can vary very widely. However there aren't enough weather radars to capture this variability. In the United States there are 160 radars or one for every 154 kilometre. India currently has 39 or about one for every 432 km, according to data presented at the briefing.

Page 04 : Prelims Fact

On The 16-Point Document on Judicial Values, adopted by the Supreme Court in 1997, outlines ethical conduct for judges, emphasising impartiality, dignity, and independence.

- It aims to maintain public confidence and probity in judicial interactions, reinforcing judiciary integrity.

16-Point Document on Judicial Values (Restatement of Values of Judicial Life):

- Adopted by the Supreme Court in a Full Court Meeting on May 7, 1997.
- Serves as a guide for the expected conduct of Supreme Court and High Court judges.
- Emphasises impartiality in judicial conduct.
- Judges should maintain a degree of aloofness consistent with the dignity of their office.
- Public confidence must be maintained through probity in interactions with other constitutional functionaries.
- A judge's behaviour must reaffirm faith in the impartiality of the judiciary.
- Judges are advised to avoid any act that erodes credibility in public perception.
- Judges are to be conscious of being under public scrutiny.
- Avoid actions or omissions that are unbecoming of their high office.
- No official or personal acts should compromise judicial independence.
- Judicial conduct should uphold the separation of powers between the Executive and Judiciary.
- It is an illustrative guide, not exhaustive.
- Highlights the need for public esteem in the judiciary.

A 16-point document on judicial values was adopted by SC in 1997

Krishnadas Rajagopal
NEW DELHI



The observations in public fora and within the legal fraternity about the propriety of Prime Minister Narendra Modi's video-graphed visit to the residence of Chief Justice of India D.Y. Chandrachud to participate in Ganesh puja are grounded in a 16-point document on judicial values adopted in a Full Court Meeting of the Supreme Court on May 7, 1997.

The document is an illustrative, and not exhaustive, guide of what is expected of Supreme Court and High Court judges

The document called the "Restatement of Values of Judicial Life" is an illustrative, and not exhaustive, guide of what is expected of Supreme Court and High Court judges.

"The behaviour and conduct of members of the higher judiciary must reaffirm the people's faith in the impartiality of the judiciary. Accordingly, any act of a judge of the Supreme Court or a High Court, whether in official or personal capacity, which erodes the credibility of this perception has to be avoided," the very first tenet of the document reads.

It recommends a judge to practise "a degree of aloofness consistent with the dignity of his office".

"Every judge must at all times be conscious that he is under the public gaze and there should be no act or omission by him which is unbecoming of the high office he occupies and the public esteem in which that office is held," the document cautions.

The Campaign for Judicial Accountability and Reforms, of which advocate Prashant Bhushan is an office-bearer, said the established practices of judicial conduct place an emphasis on maintaining public confidence through probity in the interaction between high constitutional functionaries.

"As then CJI M.N. Venkatchalliah put it to former Prime Minister Narasimha Rao, the relationship between the judiciary and ex-

ecutive has to be correct, not cordial, and cordiality between court and government has no place in our constitutional scheme of checks and balances. The judiciary..., which holds the responsibility of safeguarding the Constitution and ensuring justice without fear or favour, must be seen as entirely independent from the Executive branch," the statement said.

Senior advocate Kapil Sibal, who is also the Supreme Court Bar Association president, said the Chief Justice of India was a man of great integrity. "The issue is not the individual; the issue is what such a video clip has on the minds of the people... If there is gossip around it, it is not fair on the institution. You should not lend yourself to a situation, to be in a situation where people can gossip about the institution and start speculating. My religion and my way of expressing in the context of my beliefs is a private matter," he said.

Senior advocate Indira Jaising said: "Chief Justice of India has compromised the separation of powers between the Executive and Judiciary. The SCBA must condemn this publicly displayed compromise of independence of the CJI from the Executive."

Senior advocate Manan Kumar Mishra, Bar Council of India chairperson, however said this was merely a social, religious function and would not affect any Supreme Court judgments.

The Union Ministry dissolved the Standing Committee on Statistics (SCoS) due to overlapping roles with the new Steering Committee.

- This shift aims to address census delays and improve data reliability, as outdated 2011 census data is impacting policy decisions and public schemes.

What does dissolution of SCoS entail?

Why was the SCoS dissolved? What are the main roles of the new Steering Committee? How do the SCoS and the Steering Committee differ? How does the SCoS's dissolution impact statistical data quality? How will the new committee address the data gaps? What issues have arisen from the delay in the census?

EXPLAINER

A. M. Jigeeesh

The story so far:

The Union Ministry of Statistics and Programme Implementation has dissolved the 14-member Standing Committee on Statistics (SCoS) headed by eminent economist and former chief statistician of the country Pronab Sen. Geeta Singh Rathore, Director-General of the Ministry's National Sample Survey Office (NSSO), told the SCoS members that its works overlapped with that of the Steering Committee for National Sample Surveys, headed by Rajeeva Laxman Karandikar, former director of the Chennai Mathematical Institute and this was cited as the reason for dismantling the SCoS. Dr. Sen has said that the SCoS members had questioned the delay in conducting the census, as censuses have long been a crucial source of reliable data for policymakers. He also complained that the members were not given any specific reason for the committee's dissolution.

What were the key responsibilities of SCoS?

The SCoS advised the Centre on survey methodology, including sampling frames, sampling design, survey instruments, questions, etc. It also played a vital role in finalising the tabulation plan of surveys, reviewing the extant framework, and addressing the issues raised from time to time on the subjects, results, methodology, etc. related to all surveys. The Terms of Reference for the SCoS also included providing guidance for conducting pilot surveys/pre-testing, exploring the availability of administrative statistics relating to surveys/statistics, providing guidance for studying or identifying data gaps, providing additional data requirements, and imparting technical guidance to the



Urgent need: The 2021 census was delayed due to the COVID-19 pandemic, and even after three years, the Centre has not provided a roadmap for the next census. M.A. SRIRAM

Central and State level agencies for conducting surveys.

What is the role of the new committee?

The Steering Committee, which replaces the SCoS, has 17 members and one non-member secretary. The Centre has retained at least four members from the SCoS in the Steering Committee other than officials such as Ms. Rathore. Sonalde Desai, Bishwanath Goldar, S. Chandrasekhar, and Mausumi Bose are the four experts who are retained. The tenure of the Steering Committee will be for two years. Its Terms of Reference are quite similar to that of SCoS, including reviewing subject results, methodology questionnaires, sampling frames, sampling design, concepts, definitions, survey instruments etc. related to all National Sample Surveys. It will also advise the Ministry on survey

methodology and finalise the tabulation plan of surveys.

The mandates of both the committees clash in a way, though the composition of the Steering Committee is different as it has more official members while the SCoS had several non-official members.

Why is there a pressure for a new census?

Serious academicians and policymakers have been demanding the Centre to conduct a census. The Opposition said that the lack of fresh data keeps crores of people away from schemes such as the National Food Security Act. The Opposition has also been questioning the numbers on employment and unemployment. On the periodic labour force surveys too, there were questions. Since the Census is conducted by the Union Home Ministry, the Ministry of Statistics has been telling the SCoS

members in its meetings that it has no role in deciding the date of census. Statisticians and academics argue that the census can provide State and sub-district wise data on issues such as education and employment.

What are the flaws in administrative data?

While the Centre has been claiming that data provided by the EPFO, ESIC on its enrolments and Reserve Bank of India's KLEMS (K: Capital, L: Labour, E: Energy, M: Materials and S: Services) database gave a rosy picture about the employment scenario in the country. However, questions have been raised as administration data, especially on labour, is threshold-based. It is alleged that such data was airing the perspectives of policy architects or reflecting the government's intentions.

The chances of manipulating the administration data set were also high as Government agencies generated that data and it is also argued that such data has limitations of analytical rigour.

On the other hand, survey-based data, including the census, has universal coverage without any thresholds, providing a wider and bigger platform. However, surveys such as PLFS could not provide State or district-level data, but the census will be able to provide even sub-district data. PLFS also allegedly had an urban bias.

How urgent is the next census?

The country's decennial census has been conducted every ten years since the 1870s, with the last census in 2011. The 2021 census was delayed due to the COVID-19 pandemic, and even after three years, the Centre has not provided a roadmap for the next census. Economists and policymakers argue that relying on 2011 census data for statistical surveys, even after 13 years, will negatively impact decision making. So they suggested that the way forward is to conduct the next census at the earliest.

THE GIST

- The 14-member Standing Committee on Statistics (SCoS), led by Pronab Sen, has been dissolved due to overlap with the Steering Committee for National Sample Surveys.

- SCoS advised on survey methodologies, tabulation plans, and addressed issues related to statistical surveys.

- The new 17-member Steering Committee, including four former SCoS members, will perform similar functions but with more official members.

- There is significant pressure to conduct the next census, delayed from 2021 due to COVID-19, to provide updated data for decision-making.

- Economists and policymakers recommend conducting the next census promptly to ensure accurate data for effective decision-making.

Dissolution of the Standing Committee on Statistics (SCoS)

- The Union Ministry of Statistics and Programme Implementation dissolved the 14-member SCoS, headed by Pronab Sen, former chief statistician of India.
- The Ministry cited overlapping functions with the Steering Committee for National Sample Surveys, headed by Rajeeva Laxman Karandikar, as the reason for dismantling the SCoS.

- Dr. Sen revealed that SCoS members had questioned delays in conducting the census but were not given specific reasons for the committee's dissolution.

Key Responsibilities of Standing Committee on Statistics (SCoS)

- Advised the Centre on survey methodologies, including sampling designs, survey instruments, and tabulation plans.
- Provided guidance on conducting pilot surveys, pre-testing, identifying data gaps, and additional data requirements.
- Offered technical advice to both Central and State agencies for conducting surveys.

Role of the New Steering Committee

- The new Steering Committee has 17 members, including retained members from SCoS and additional officials.
- Its responsibilities include reviewing methodologies, sampling designs, and survey instruments for National Sample Surveys.
- The Committee's role is similar to that of SCoS, but with more official members.

Pressure for a New Census

- Academics and policymakers demand a new census as outdated 2011 data affects schemes like the National Food Security Act.
- The Opposition questions employment and unemployment figures and calls for reliable, up-to-date census data.
- The census provides crucial State and sub-district-level data on education and employment.

Flaws in Administrative Data

- Government data from EPFO, ESIC, and RBI's KLEMS database is seen as biased and threshold-based.
- There are concerns that administrative data reflects government intentions and lacks analytical rigour.
- Survey-based data, like the census, has universal coverage and greater reliability.

Urgency of the Next Census

- India's last census was in 2011, and the 2021 census has been delayed due to COVID-19.
- Economists argue that relying on 2011 data negatively impacts decision-making, urging the government to conduct the next census soon.

Dark patterns in digital design manipulate users into unwanted actions, eroding trust and risking legal repercussions.

- With India's e-commerce boom, the Department of Consumer Affairs has issued new guidelines to counter these practices, reflecting global efforts to enforce ethical standards.

Dark patterns pose a growing concern in India's digital landscape

In India's rapidly expanding e-commerce landscape, the practices undermine consumer trust and pose significant risks to the sector; globally, regulatory bodies are acting against such practices; India's initiatives are crucial steps in protecting consumers from unfair practices

COMMENT

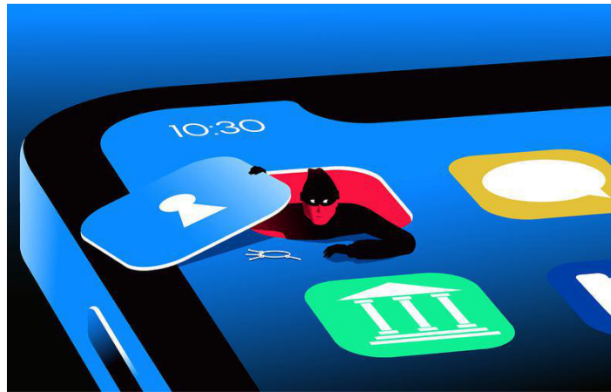
Dharmender Jhamb

In recent years, as the digital landscape continues to expand, websites and apps have become integral to daily lives. However, a troubling trend has emerged alongside this growth: Dark patterns. The deceptive design practices are used to manipulate users into making decisions they might not otherwise make, such as signing up for unwanted services or sharing personal information. By exploiting human psychology and clever design, dark patterns benefit companies at the expense of consumers.

This issue is particularly pressing within India's rapidly-growing e-commerce sector, expected to reach a market size of 350 billion by 2030. The growth is driven by increased Internet and smartphone penetration, with about 936.16 million Internet subscribers and 350 million mature online users actively engaging in transactions.

As online shopping becomes more prevalent, dark patterns are increasingly used to manipulate user decisions, exploiting the surge in digital activity.

Common dark patterns include creating a false sense of urgency to rush users into making purchases, hiding subscription



Digital danger: Dark patterns are increasingly used to manipulate user decision. GETTY IMAGES/ISTOCK

cancellations deep within websites, and using confusing language to mislead users. The tactics are unethical and undermine the integrity of the design process, leading to practices that prioritise manipulation over genuine long-term user engagement. The practices fall under 'unfair trade practices' category under Consumer Protection Act, 2019.

Recognising the gravity of the issue, the Department of Consumer Affairs, on November 30, 2023, issued 'Guidelines for Prevention and Regulation of Dark Patterns, 2023' under the Consumer Protection Act, 2019, identifying 13 common dark patterns prevalent in e-com applications and websites.



Businesses have to adopt a user-first approach by regularly reviewing and improving interfaces to remove these dark patterns

Beyond specific guidelines, there have been significant developments in the international space to regulate dark patterns. In the European Union, regulations such as the Digital Services Act (DSA), General Data Protection Regulation (GDPR) and the Unfair Commercial Practices Directive (UCPD) address the concerns. In the United States, various States have introduced legislation to

combat dark patterns, including the California Privacy Rights Act, the Connecticut Data Privacy Act, and Colorado Privacy Act.

Ethical challenges

Dark patterns pose a significant ethical challenge by manipulating consumer behaviour, undermining transparency and user autonomy. The tactics exploit psychological tendencies, leading users to actions that benefit firms rather than fostering fairness. By using misleading information, hidden fees, or confusing navigation, dark patterns break the expectation of honest interactions, making it hard for users to make informed choices. This not only harms users but also risks

damaging the reputation of businesses, leading to lower customer loyalty, higher turnover, and negative word-of-mouth, ultimately hurting the firm's brand and competitiveness.

Moreover, regulatory bodies are increasingly focusing on dark patterns under consumer protection laws. Companies that continue to use these practices could face fines, legal actions, and damage to reputation, which could threaten market position.

Ethical design

Addressing this needs collective effort from stakeholders. Businesses need to adopt a user-first approach by regularly reviewing and improving interfaces to remove the patterns. This focus on transparency ensures clients can easily understand and use services with clear information on subscription terms, easy options to opt out and candid instructions for cancelling services.

Educating designers and developers on ethical design practices is essential for responsible innovation. By incorporating ethics into design training and professional development, we can ensure designers consider the broader impact of the work. This approach encourages the creation of interfaces that are clear and functional.

Regulators are essential

in safeguarding consumers by establishing and enforcing guidelines that promote ethical design such as mandatory disclosures, penalties for non-compliance, and regular audits. User advocacy groups complement the efforts by educating consumers about their rights, helping identify and report dark patterns and collaborating with businesses to uphold best practices. Technological solutions like browser extensions and plug-ins further empower users by detecting and warning against potential dark patterns, thereby increasing consumer awareness and confidence in safely navigating digital platforms.

Conclusion

In India's rapidly expanding e-commerce landscape, the practices undermine consumer trust and pose significant risks to the sector. Globally, regulatory bodies are acting against such practices.

India's initiatives, including the Consumer Protection (E-commerce) Rules, 2020, and new guidelines are crucial steps in protecting consumers from unfair practices.

By enforcing strict regulations and promoting ethical design, India is positioning itself as a global leader in fostering fair digital practices.

(The writer is Partner, Grant Thornton Bharat)

Analysis of the news:

What are Dark Patterns?

- Dark patterns are deceptive design practices used in websites and apps to manipulate users into making decisions they might not have otherwise made. These tactics exploit psychological tendencies and often involve misleading information, hidden fees, or confusing navigation.
- Common examples include creating false urgency, making subscription cancellations difficult to find, and using misleading language to trick users.

Concerns Posed by Dark Patterns

- **Consumer Manipulation:** Dark patterns exploit psychological biases to push users into actions they did not intend, such as signing up for unwanted services or sharing personal information.
- **Undermining Trust:** These deceptive practices erode trust in digital platforms and online transactions, potentially leading to lower customer loyalty and increased negative perceptions of businesses.
- **Legal and Ethical Risks:** Companies using dark patterns face legal risks under consumer protection laws. In India, such practices fall under 'unfair trade practices' as per the Consumer Protection Act, 2019.
- **Impact on Market Position:** Businesses relying on dark patterns risk fines, legal actions, and damage to their reputation, which can affect their market position and competitiveness.

Way Forward

- **Adopt Ethical Design Practices:** Businesses should prioritise transparency by designing user-friendly interfaces with clear information on subscription terms and easy options for opting out or cancelling services.
- **Educate Designers and Developers:** Incorporate ethics into design training to ensure professionals consider the broader impact of their work and avoid employing manipulative tactics.
- **Strengthen Regulations:** Regulatory bodies should enforce guidelines that prevent dark patterns, including mandatory disclosures, penalties for non-compliance, and regular audits to ensure adherence.
- **Empower Consumers:** Use technological solutions like browser extensions and plug-ins to detect and warn users about potential dark patterns. Consumer advocacy groups should educate users about their rights and encourage reporting of unethical practices.
- **International Collaboration:** Learn from global regulations such as the EU's Digital Services Act and GDPR to shape and enhance national guidelines against dark patterns.

Term In news : SpaceX Polaris Dawn Mission

Jared Isaacman and the SpaceX Polaris Dawn crew have achieved a historic milestone with the first private spacewalk by non-professional astronauts.

- This groundbreaking event underscores the growing role of private individuals in space exploration and commercial space travel.



SpaceX Polaris Dawn Mission:

- **Mission Overview:** SpaceX Polaris Dawn is a private space mission focusing on pioneering advanced spacewalks and high-altitude scientific experiments.
- **Crew:** The mission is led by Jared Isaacman, a private astronaut and space entrepreneur, along with other non-professional astronauts.
- **Historic Achievement:** It marks the first spacewalk conducted by non-professional astronauts, showcasing advancements in private space exploration.
- **Objectives:** Key objectives include conducting scientific research in microgravity, testing new space technologies, and expanding the capabilities of private space missions.
- **Spacecraft:** The mission uses a SpaceX Crew Dragon spacecraft, known for its reliability and advanced technology.

- ➔ **Significance:** Polaris Dawn represents a significant milestone in the democratisation of space travel and commercial space exploration.



Health care using AI is bold, but much caution first

News about the possibility of a “free AI powered primary-care physician for every Indian, available 24/7” within the next five years is ambitious. It raises critical questions about feasibility, sustainability, and the readiness of India to tackle such enormous undertakings.

Primary health care (PHC) ensures the right to the highest attainable level of health by bringing integrated services closer to communities. It addresses health needs, tackles broader health determinants through multisectoral action, and empowers individuals to manage their health. We risk undermining this fundamental aspect of PHC by relying on Artificial Intelligence (AI) as it is impersonal, making people passive recipients of care rather than active participants.

AI excels in processing and automating repetitive tasks but lacks characteristics of human intelligence such as understanding the physical world, retrieving complex information, maintaining persistent memory, and engaging in reasoning and planning. These are all fundamental to medicine, where understanding the nuances of a patient's condition goes beyond pattern recognition.

Delivering health care demands a human-centric approach of empathy and cultural understanding. Consciousness – the awareness and understanding of the real-world environment – underpins human decision-making, distinguishing human intelligence from AI. AI cannot replicate the moral and ethical reasoning that comes from conscious experience. Unlike other domains, health-care data is scattered, incomplete and often inaccessible for AI training, making it difficult to train a model.

Data, models and issues

Naegele's rule from obstetrics, which has been in use for over 200 years, can be used to highlight the challenges in health care. It is based on 18th century reproductive habits of European women, which may not be applicable today. This method is used to predict the birth date of a child during pregnancy. It relies solely on the length of the last menstrual cycle and has a 4% accuracy. It fails to account for critical factors such as maternal age, parity, nutrition, height, race, and uterus type,



Dr. C. Aravinda

an academic and public health physician

India cannot jump into AI-driven health care without first addressing the foundational issues within its health system

which are essential for accurate prediction. Developing a better predictive model than Naegele's rule requires vast amounts of personal data, which belong rightfully to patients. This illustrates the inherent paradox in AI development in health care – the need for extensive data collection to improve accuracy is at odds with privacy and ethical concerns.

The costs involved in establishing infrastructure to capture, collect, and train this data are substantial. As reproductive health and fertility rates change over time, constant fine-tuning of AI models is necessary, leading to recurring expenses. Health-care data is complex and personal, making it difficult to standardise it across populations.

India's diversity complicates the issue further. This diversity means that data for AI models must be extensive and deeply contextualised, but generating such data requires access to personal and behavioural information.

AI's utility in health care

AI can play a crucial role in specific, well-defined tasks within health care, particularly through narrow intelligence, diffusion models and transformers. Narrow intelligence focuses on specialised tasks such as predicting hospital kitchen supply needs, managing biomedical waste, or optimising drug procurement. Diffusion models, which are adept at predicting patterns from complex datasets, can help screen histopathology slides or screen only a subset of the population using medical images.

Large Language Models (LLMs) and Large Multimodal Models (LMMs) are emerging as powerful tools in medical education and research writing. These can provide rapid access to medical knowledge, simulate patient interactions, and support the training of health-care professionals. By offering personalised learning experiences and simulating complex clinical scenarios, LLMs and LMMs can complement traditional medical education

A significant issue with AI in health care is the “black box” problem, where the decision-making processes of AI algorithms are not transparent or easily understood. This poses risks in health care,

where understanding the rationale behind a diagnosis or treatment plan is critical. Health-care providers are left in the dark about how certain conclusions are reached, leading to a lack of trust and potential harm if the AI makes an incorrect or inappropriate recommendation.

Google DeepMind's AI mysterious algorithm defeating world-class players in the GO game (board game) can be celebrated. While such feats are acceptable for games, they raise concerns in real-life health-care decisions. The stakes are serious in human health, where the consequences of a mistake can be life-threatening.

India and the issue of AI governance

A recent petition in the Kenyan Parliament by content moderators against OpenAI's ChatGPT has highlighted the ethical complexities in AI development, revealing the exploitation of underpaid workers in training AI models. This raises concerns about the exploitation of vulnerable populations in AI training. It underscores the importance of safeguarding the interests of Indian patients because the data required to train the model legally belong to patients.

While population-level data generated by health systems can be useful, it is prone to ecological fallacy. India lacks comprehensive regulation or legislation addressing AI such as the European Union Artificial Intelligence Act, making it all the more critical. AI tools in health care must be developed and deployed with the core medical ethics of “Do No Harm”.

AI-powered health care in India promises increased efficiency and reduced error rates. Advanced AI technologies require significant investments in research, data infrastructure, and continuous updates – costs that someone must bear. India cannot leapfrog into AI-driven health care without first addressing the foundational issues in its health system. The complexities of patient care, the need for high-quality data, and the ethical implications of AI demand a more measured approach.

The views expressed are personal

GS Paper 02 : Social Justice – Health

PYQ: (UPSC CSE (M) GS-3 2023): Introduce the concept of Artificial Intelligence (AI).

How does AI help clinical diagnosis? Do you perceive any threat to privacy of the individual in the use of AI in healthcare? (150 w /10 m)

UPSC Mains Practice Question Discuss the potential benefits and challenges of integrating AI-powered primary health care in India. How can the ethical and data privacy concerns associated with AI in healthcare be addressed? (250 w /15 m)

Context :

- The article discusses the ambitious goal of implementing AI-powered primary health care in India, highlighting the potential benefits and challenges.
- It emphasises concerns over AI's limitations, ethical issues, data privacy, and the need for a human-centric approach in health care, while calling for a cautious and measured implementation strategy.

AI in Primary Health Care: Ambitious but Complex Undertaking

- Recent news suggests that India may have a free AI-powered primary-care physician available 24/7 for every citizen within the next five years.
- This raises significant questions about its feasibility, sustainability, and whether India is prepared for such a massive shift in its health care system.

Primary Health Care and AI Concerns

- Primary Health Care (PHC) ensures the highest attainable health levels by bringing integrated services closer to communities.
- PHC addresses not only health needs but also broader health determinants through multisectoral actions, empowering individuals to manage their health.
- Relying heavily on AI could undermine the personal and human-centered aspect of PHC by making patients passive recipients of care rather than active participants.
- While AI excels in automation, it lacks key characteristics of human intelligence, such as reasoning, planning, and emotional understanding — essential elements in medicine.

Limitations of AI in Medicine

- **Human-Centric Approach:** AI lacks empathy, cultural understanding, and the consciousness necessary for effective medical decision-making.

- **Data Challenges:** Health care data is often scattered, incomplete, and inaccessible for AI model training, complicating the development of accurate AI systems.
- **Understanding Complex Conditions:** Medicine requires more than pattern recognition; it requires context, moral reasoning, and awareness of the real-world environment, areas where AI falls short.

Naegele's Rule and Health Care Data Challenges

- Naegele's rule, a widely used method to predict birth dates, highlights challenges in health care AI development.
- This rule, based on outdated reproductive habits, has only 4% accuracy and ignores critical factors like maternal age, race, and nutrition.
- A better predictive model would require vast personal data, raising ethical concerns over privacy and the rightful ownership of health data.
- Establishing infrastructure for data collection, storage, and training AI models is costly, and continuous updates are necessary as health trends evolve.

The Complexity of Health Care Data in India

- India's diversity adds complexity to the development of AI models, which require vast, contextualised data that accounts for personal and behavioural differences.
- Accessing and using this data raises further ethical concerns, especially regarding patient privacy and data ownership.

AI's Role in Specific Health Care Tasks

- **AI has potential in performing narrow, specialised tasks within health care:**
 - **Narrow Intelligence:** Focuses on tasks like managing hospital supply chains, biomedical waste, and drug procurement.
 - **Diffusion Models:** Can analyse complex datasets to predict outcomes, such as screening histopathology slides.
- **Large Language Models (LLMs) and Large Multimodal Models (LMMs):**
 - These emerging tools can aid medical education, simulate patient interactions, and support health-care professionals in research and training.
 - They offer personalised learning experiences, simulating clinical scenarios to complement traditional education.

The "Black Box" Problem in AI Health Care

- AI's decision-making processes are often opaque, known as the "black box" problem.
- In health care, this lack of transparency is dangerous, as understanding the rationale behind diagnoses or treatments is crucial.
- **Trust Issues:** Health-care providers may struggle to trust AI systems if the underlying reasoning is not clear, which could result in incorrect recommendations and potential harm.

Ethical and Practical Challenges in AI Development

- The use of AI in other domains, such as Google DeepMind's victory in the GO game, can be celebrated, but in health care, mistakes can be life-threatening.
- The ethical implications of AI are highlighted by the case of Kenyan content moderators who petitioned against OpenAI's ChatGPT due to exploitation.
- This raises concerns about exploiting vulnerable populations in AI training and the need to safeguard Indian patients' data.

The Importance of AI Governance in India

- **AI Governance:** India lacks comprehensive AI regulations, unlike the European Union's Artificial Intelligence Act.
 - Without strict regulations, there is a risk of misuse or harm, making it critical to address AI development through the lens of medical ethics.
- **Data Ownership:** Population-level data is prone to ecological fallacies, and it is crucial to recognize that health data belongs to patients, not AI developers.

The Promise and Cost of AI in Health Care

- **Efficiency and Accuracy:** AI promises improved efficiency and reduced errors in health care, but implementing it requires substantial investments in research, infrastructure, and ongoing updates.
- **Cost Concerns:** Developing and maintaining AI systems involves high costs, raising questions about who will bear the financial burden.
- **India's Readiness:** While AI could enhance health care delivery, India must first address foundational issues within its health system before jumping into AI-driven solutions.

Conclusion: A Measured Approach is Needed

- AI holds potential in certain areas of health care, but relying on it for primary care raises numerous challenges.
- India's health-care system, with its complexities and diverse population, requires careful consideration of data quality, ethical implications, and patient care nuances before embracing AI at scale.
- A more measured and cautious approach is needed to ensure that AI complements human health care without undermining its core values..