The Strategic and Civilized AI

Analytical Report

Responsible AI in India: First Analytical Report [2021]

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Synopsis of the brief

This analytical report is one of the key analytical reports on India and the impact of AI technologies in India Inc. in general. These are the considerations that must be established from the report:

- Risk assessment over the impact of incorrect predictions and, when reasonable, design systems with human-in-the-loop review processes must be indigenized with Indian standards;
- Standards on bias evaluation must be essentially developed, where the bargaining power of Indian companies and governments must prevail;
- The hierarchies of Fairness, Responsibility, Reproducibility, Transparency and Accountability- vertical and horizontal must be thoroughly assessed to prevail the bargaining power of Indian entities and the State;
- The dynamics of automation of services must be thoroughly assessed and human privity cum autonomy must be respected in the context of India's respect of fundamental rights and civil cum individual liberties (and creative liberties);
- The hierarchies of privacy by design and default cum the pseudonymization of data must be assessed and evaluated in terms of their generality, indifference and diverse approaches;
- AI services and products being procured (and democratized+localized) in India must be scrutinized on the basis of the case by application - by - case by application approach (we call it a Species approach);
- AI's status as an electronic legal personality or a limited juristic entity has to be assessed on the basis of trends and data evaluation, wherein the report will help us to further inspect the attributions which work in India;

India is one of the worlds' fastest-growing economies and is in an influential position globally, this has given India the potential to make a big contribution in reinforcing the AI revolution. India has a history of breathing new life into struggling and slow-moving industries by bringing in innovative technology solutions in a secure and reliable manner that is optimized for the needs of the Indian Market, the Indian People the Indian Economy. India has also set up a strong and supportive innovation infrastructure in the realm of research and development in the technology sector.

Technological innovations and revolutions aid humans in being more efficient and productive. These innovations come from the creation of new knowledge and the better application of existing knowledge. While humans are extremely good at research there are a number of tasks that are time and resource consuming, such as the selection of certain variables from a group of options, etc. Such tasks can be delegated to machines (Predictive AI Algorithms), this will reduce the amount of time between now and the next innovation, it can also reduce the amount of time that is spent on administrative tasks across the business chain. The acceptance and adoption of AI across the business chain, including startups, the private sector, public sector organizations, and government bodies, will unleash the potential by generating a virtuous demand and supply cycle by helping these bodies make informed decisions, preparing for crisis and choosing the best route for expansion.

The government must act as a catalyst in the process of incorporating AI into the economy by encouraging collaboration, providing infrastructure, stimulating innovation through research and development, and by providing protection and safeguards to those parties that are 'taking the AI leap'.

India's AI Habitat

AI systems have risen in popularity over the last few years owing to their enormous potential to unlock economic value and aid in the mitigation of social difficulties. This has led to the widespread adoption of Artificial Intelligence in various different contexts and use-cases in multiple domains. A paradigm change of this density in the progress of AI inspires both optimism and alarm. AI has the potential to eradicate illness and poverty throughout the world, improve productivity, and boost economies, but it also has the potential to take jobs away from hardworking citizens, and impoverish thousands. Although the precise form of the changes that AI will bring to many industries is yet unknown, considerable disruption to the workforce is almost certain. (Chakrabarti, Sanyal 2020)

India ranks third in the world in terms of providing high-quality research in the realm of AI. India has developed research in the realms of unsupervised learning, reinforcement learning, explainable AI, casual modelling and blockchain. As of August 2020, the Indian AI Market is worth $6.4 Billion. The majority of AI market share and size comes from the multi-national corporations (MNCs) in the Information Technology (IT) (41.1% market share), Technology (Software + Hardware, 23.3% Market Share) and electronic categories. AI is also used in the banking, financial services and insurance industry, this industry has a 9.6% market share of AI Services. (Thomas 2020)

There are around 91,000 AI Professionals working in India, with a typical income of Rs. 14.7 Lakhs, with the highest earners earning Rs. 16.7 Lakhs in Mumbai.

Creation and Basis of AI Eco-Systems

An Eco-system is a group of independently functioning, but inter-dependent bodies that aid each other in the growth and development of the community as a whole. In a jungle eco-system, the plant provide food to the herbivores, that become food for the carnivores that in turn fertilize the soil, etc. Similarly, an AI Eco-system is a set of independent bodies that – when working smoothly – give impetus to the growth of India's AI infrastructure and power. As per a report by Accenture, the five pillars of an AI Eco-System are:

1. Universities (For Research and Development)
2. Major Corporations (For Investment and large-scale adoption, and lobby for policy)
3. Start-ups (For local level optimization, also known as Entrepreneurial dynamism)
4. Policy Makers (Manage fears and incentivize further adoption, innovation, etc.)
5. Multi-Stakeholder collaborations (To generate a consensus about where we want AI to take us)

The relative importance of these 5 pillars varies from market to market, due to factors like the maturity of individual businesses, and the region's political culture. (Trapasso, Vujanic, Accenture 2010)

India's AI Eco-System is healthy, but can do much better.

Universities: In 2016, the country generated 2.6 million STEM (Science, Technology Engineering, and Mathematics) professionals through its robust Engineering and Technology Universities. Although this makes them qualified for the core values required for AI R&D (i.e., there is a large number of Knowledge Makers), the level of practical competency and employability have remained poor.

Further, there are a lack of research-based opportunities within the country that utilize the skills of and award professionals properly for their efforts (i.e., there is a low number of Knowledge Takers). The mismatch between knowledge makers and knowledge takers results in issues like brain drain, and the suboptimal usage of the human capital that is generated every year.

Major Corporations: Leading Indian banks have rolled out, or are pilot testing, AI-powered conversational chatbots for their websites and/or mobile applications. Tata Motors has collaborated with Microsoft to leverage the latter's connected vehicle technology that uses AI, advanced machine learning and the Internet of Things to enhance driving experience.

Startups: In 2016, India placed third among G20 nations in terms of the number of AI startups, with a compound annual growth rate of 86 percent since 2011, which is greater than the worldwide average.

Policy Makers: In June 2020, the Indian government announced www.ai.gov.in, a dedicated artificial intelligence (AI) platform jointly created by the Ministry of Electronics and IT (MeitY) and the national IT trade organization NASSCOM (The National Association of Software and Service Companies). It is being marketed in India as a one-stop shop for AI breakthroughs.

Multi Stakeholder Collaborations: In India, the Ministry of Electronics and Information Technology has recently established a "policy group" in collaboration with Nasscom to develop a regulatory framework and road map for new technologies such as AI, blockchain, and big data analytics. Furthermore, the Ministry of Commerce and Industry has established an "AI task force" to investigate the potential for using AI for development in various industrial and service areas.

Given the health and the promising developments in India's AI realm over the past couple of years, there is a reason to believe that this segment of the country will see significant improvement and boom in the coming years. AI is already being put to good use in India:

- An AI-based flood forecasting model that was adopted in Bihar is now being expanded to span the entire country
- SigTuple an Indian Startup designed a data-driven intelligence platform for healthcare management that can analyse blood slides and generate an entire pathology report without requiring a pathologist
- Gnani.ai is one of the new well-known companies in India taking a shot at Indic NLP. Gnani.ai creates speech analysis and assistant products for Indian dialects and other various dialects.

A country full of excited and enthused youth, India's AI journey is still in its nascent stages. The Standford AI Vibrancy Index positions India at the sixth position out of 26 total countries across 22 different indicators that span across the categories of R&D, Economy and Inclusivity. (Rekha M. Menon, Pradeep Roy 2021)

The Important Conversation

However, as AI Grows, it is time that we initiate an important conversation about how AI can impact society.

- In 2018, Amazon faced public criticism about using an algorithm for hiring decisions which resulted in the loss of opportunity to many candidates that had the word "Women's" on their resumes (Women's college, Women's Baseball team, etc.) (Dastin 2018)
- In 2016, ProPublica audited an algorithm that was used to assess the risk of recidivism of convicts, and found that the algorithm was continuously marking African American convicts at a higher risk of recidivism than convicts of lighter skin tones. (Mattu 2016)
- In 2020, the United Kingdom's Office of Qualifications and Examinations Regulation marked A-Level Students using a grade generation algorithm which gave an estimation of the student's final grade based on their past performance. The system was however designed to combat grade inflation, and did not consider several factors which may have contributed to lower grades of students in the past. (Nast 2020)

These issues are just some of the countless other 'bugs' that AI Systems are susceptible too (ImmuniWeb 2020). In her TED Talk, Researcher Janelle Shane speaks about how the danger of an AI is not that it will get the assignment wrong, but that it will get the assignment right without serving the purpose it was designed for. For Example, a self-driving car's AI is given the assignment to prevent crashes, so it is trained by being taught to avoid the back of a truck and it does that perfectly, but if a truck appears sideways Infront of the car, it may assume it to be a billboard and end up ramming itself into it. (Janelle Shane 2019)

Algorithms and artificial intelligence do have ability to make life better for people. However, because AI is still a modern phenomenon, it is prone to errors. The bulk of these failures aren't catastrophic; almost every limitation can be solved; but many projects fail tragically, leaving the organisation with a significant investment in development with little to show for it.

Algorithmic predictions and results might fail owing to a variety of variables. However, most of the time, the cause of such failure can be identified and improved. The most common reasons why prediction models fail and their potential consequences are listed below:

- Incorrect or inadequate data: The most important element of Intelligence is data. Machine learning (deep learning) techniques are used to create predictive models using data sets. Generally, a machine learning assignment would necessitate the collection of massive datasets in order to construct an acceptable model. The information has to be a good representation of the real scenario.
- Incorrect application area: It is possible that the information gathered for an operation is too complicated, or that the outcome should be considerably more exact than any algorithm can deliver. The use of AI approaches to education, law, and other businesses, for example, may be too problematic. Automation may even become a problem rather than a solution in the hospitality business, because people require more than just being served.
- Poor technology: It's often challenging to determine whether a particular breakdown is the result of poor technology because it is practically difficult to go through the script and obtain all of the areas to ensure that the gap occurred (e.g. but not in the data). Of course, we can reasonably presume that design was competent in the cases given here as the corporations named can pay the smartest of the engineers.

Thus, there is a need for an AI that understands the assignment and performs it in a way that does not end up causing more harm (as seen in the examples from 2016, 2018 and 2020). An AI that follows certain ethical guidelines while meeting its mission properly. Such an AI is called a **Responsible AI.** (Bhawalkar 2021)

Responsible AI

Responsible AI is a framework and set of principles that holds AI applications responsible for the decisions they make – just like humans. i.e., it is a set of rules and regulations that is focused on holding AI Accountable for the decisions that it makes. It is a process and philosophy of designing, developing and deploying AI with the goal of empowering people and organizations while also having a fair influence consumers and society. A responsible AI will allow businesses and governments to achieve their goals and improve their productivity without negatively impacting society. A responsible AI is essential for the development and maintenance of public trust and confidence in AI.

This philosophy arose after the discovery of the impact that misuse, abuse, poor design or negative unintended consequences of an AI could have on a society, these must be pointed out and rectified. While most developers agree on a set of ethical values, there is still a debate on how these values should be best implemented and how the values should be converted into actionable, tangible actions that affect everyday choices and offer proof of success in order to demonstrate that they are not violating those standards.

In order to guide the development of a responsible AI, we have organized our analysis and suggestions according to certain core values and principles These are as follows:

• Fairness
• Responsibility and Accountability
• Privacy and governance
• Transparency and Reproducibility

Principles relevant to designing Responsible AI Models

Principle of Accuracy

Accuracy here refers to the trueness of a prediction made by an AI Model, 'Prediction' in the context of AI means obtaining an output on the basis of historical data that is fed to the AI model. The output is not necessarily related to the future. It is important to note that AI is only as good as the data that is used for its training and thus it is important to accept that bad data can often lead to bad results and bad predictions. Following is a table of AI uses and their corresponding risks (Prediction in AI no date; Tom Bigham et al. 2021; Branscombe 2015).

Area	AI used to predict or suggest…	Risk of inaccurate prediction
Business Activities	Demand of a certain product during a unit of time	Over or under production resulting in loss
	Customer churn	Wasting resources or scaring customers off
	Hiring, Firing or Promotion	Arbitrary restriction and limitation of opportunity to some groups
	Behaviour of financial asset	Loss or market manipulation
Healthcare	Possible diagnosis or health complications	Wrong treatment, medicine, causing more health complications
	Risk of suicide	Triggering, anxiety induing or loss of opportunity
	Cost of treatment	Discouraging or giving unreal expectations of treatments
On the Internet	Relevant/similar search results	Unwanted but remotely connected suggestions
	Relevant/similar content suggestions	Radicalisation, pushing false information
	Flagging for illegal activities	Restricting innocent users' outreach, & ability to leverage the platform
	Flagging as dangerous or disruptive for the rest of the community	Marking users of a potential ideology or belief system as a threat, even though no such behaviour is displayed
	Flagging as infringing on copyright or other proprietary right	Incorrect flagging of content as infringing, causing loss to the developer or creator
	Flagging user for suicide risk	Triggering, anxiety induing or loss of opportunity
Governance and policy	Voter opinion and popular issues	Disproportionate representation of opinions and issues, resulting in majoritarianism, minority suppression or disregard
	Possible Election Results	Incorrect prediction
	Allocation of resources	Over or under allocation of certain areas and communities
Personal Security and Privacy	Analysing account behaviour and flagging suspicious behaviour	Restricting users' outreach, & ability to leverage the platform
	Analysing transactions and flagging suspicious spending behaviour	Restricting users' outreach, & ability to access own accounts, etc.

Further, as AI has gained steam, leading software vendors have moved beyond traditional software development to provide more comprehensive products and services that effectively automate corporate intelligence and predictive analytical activities. (iTechLaw 2019)

What exactly is Predictive Analytics?

Predictive analytics employs artificial intelligence to forecast outcomes based on data. Artificial intelligence influences a forecasting model in predictive analytics platforms and applications. Machine learning is an AI tool that detects patterns in large datasets. Machine learning can then apply what it has learned to forecast future trends in analytics, generally by incorporating correlation analytical tools into the forecasting model.

Predictive analytics has numerous applications in business management, many of which are concerned with forecasting future outcomes and/or behaviour. It can predict everything from customer attrition to maintenance work to identify suspicious transactions. These predictions have the potential to save a company's life or generate enormous commercial value.

Predictive Analytics and Artificial Intelligence

The sheer volume of data makes it almost impossible for humans to glean insights from it. A forecasting model powered by Artificial Intelligence may extract enormous insights from data that you presently have. AI-powered predictive analytics can tell you what's happening right and what's wrong with your business, predict which prospects will convert into potential consumers, uncover insights about your competition, and predict what your intended audience want to consume. To help your business thrive, predictive analytics tools are already available from vendors such as Adobe Analytics, Google Analytics, Helixa, and others. (Mike Kaput 2021)

Considering predictive analysis is the backbone of modern business, any incorrect or erroneous prediction can cost the company a fortune. As a result, it is critical for AI developers to verify that the results obtained using automated technologies are accurate and trustworthy. Given below are some suggestions to improve the overall accuracy of AI predictions.

Suggestions to improve accuracy and reduce the risk of incorrect predictions

Human in The Loop Designs (HITL Designs)
HITL means that a human being's judgement and interaction is required before the process continues to the next step. HITL in machine learning refers to the stages of the model development process or stages at which the model is running that require a person to inspect, validate or change some part of the process to train and deploy a model into production or assess the alignment of the output with important metrics (Key Performance Indicators). E.g., An engineer verifies the prediction before moving it to the next stage of development. OR a human structuring or tidying data that is received before putting it into the bot, OR a moderator screening the results of the AI before the process is considered completed. (CloudFactory 2017)

In Many cases HITL processes are outsourced to different companies so that the developers can focus on development, this can cause the potential mismanagement of data, embedding of biases that are not intended by the developers, etc. Human in the loop processes should be included in Prediction models to mitigate the risk of error, and also to ensure accountability and increase responsibility of the AI Models that are deployed.

While Human the Loop Designs mitigate the margin of error. There are conditions where the inclusion of Humans in the process should be guided by a set of principles that make the predication more relevant in the Indian Context. The following checklist can be followed to determine when an existing process should be indigenized according to Indian Standards:

- Was the model not designed for use in the Indian Subcontinent?
- Was the model not given access to adequate, correct and good quality data related to the Indian sub-continent?
- Does the model relate to any political, economic, social, environmental or legal issue in India?

If any of the above statements stand true the deployment of Indigenized Standards should be considered.

Principle of Fairness

Fairness refers to quality of an AI to make decisions that are not manipulated by sensitive characteristics of the data that has no bearing on the goal of the algorithm. Fairness should be prioritized in AI development, this would include dealing with algorithms and data bias from the start to ensure fairness and non-discrimination. [1]

Theoretically, AI as an objective problem-solving machine should not display unfairness or any sort of discrimination because an AI does not go through the social training and experiences that humans do – which result in the development of biases; thus, they should be the ultimate tool to not make biased decisions, however this is not true because of embedded biases in the data that an AI Model is trained upon (Sambasivan et al. 2021).

Embedded Bias

'Bias' refers to the tendency to prefer one point of view, frame of reference or type of information over equally valid alternatives. An example of a bias in real life could be choosing a piece of black furniture over a piece of white furniture because the individual making the decision likes that colour. Although bias in such a situation is inconsequential, bias can creep into more important areas, such as hiring decisions, policy decisions or more. For example, the Human Resources Employee that is tasked with hiring a new member for the company may have the belief that individuals of one gender are more effective than those of another gender, even if both individuals have an equal amount of experience, education and qualification for the position in question, this bias could directly result in the loss of opportunity to someone. (What Do We Do About the Biases in AI? no date)

A lot of biases are latent, i.e., individuals may carry them without ever noticing their presence, and even pass these biases on to the work that they do, for example if you search for 'Professional Haircut' on Google Images then you will be greeted by many broodings, muscular, white males in suits, search for 'Unprofessional Haircut' and you will be greeted by men and women of multiple skin tones (mostly non-white) sporting hairstyles that are mostly genetically or culturally decided. Although Google came under fire for this in 2016, the fact of the matter is that these results came from articles, blog posts, tweets and photos that internet users uploaded. Well intentioned Articles written for students going for their first interviews suggested cutting your hair shorter if you are a male, or straightening it if you are female, as a result the algorithm perceived all other types of haircuts and hairstyles as unprofessional. (Jake Silberg, James Manyika 2019)

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[1] It must be noted here that there are multiple perceptions of what fairness means, in fact researchers in the AI Community have identified more than 21 different definitions of fairness. While some of them perceive fairness as the ability of an algorithm to ignore all biases, there are some perceptions that brand a fair AI as one which empowers historically oppressed or disempowered communities. The question of 'What is fair?' continues to evolve and develop as developers create new strategies. For the purposes of this report, fairness is considered to be the absence of biases in the functioning of an AI.

Similarly, bias can be embedded into the data that is fed into an AI. For example, if an organisation starts using an AI for hiring or promotional decisions then they may feed it with data of past hires and promotions. If the past hiring and promotional decisions were made by a biased party then the data that is provided to the AI is of a biased nature itself and thus the output by the AI will in all probabilities be biased. The success of an AI is often measured by the similarity between the AI's decisions and the decisions by a human performing the same job, a high rate of similarity to a highly biased human being is far from a success in the context of fairness.

Since the primary source of all biased decisions made by an AI come from the biased or bias bearing data that is fed to it – the obvious solution is to not feed biased data to the AI in the first place, however that is an extremely ambitious task. In order to have a truly unbiased AI we would need an extremely unbiased human to review the data that is being fed to the AI, such a person is extremely rare to find. The closest we can get to making data more unbiased is to set certain standards that must be adhered to in order to minimize the bias that is displayed by the AI model. Additionally, data that is mislabelled, not labelled properly or labelled in a manner that is unreadable by the AI system can lead to biased decisions as well. Therefore, there is a need to set up certain standards of data quality that needs to be fed into the AI in order to create better bias evaluation systems. (Eleanor Bird et al. 2020)

Suggestions for Standards on AI Bias Evaluation

Enabling Minimally Biased Machine Learning Ecosystem
This can be achieved by setting up a system of checks and balances that will all contribute to the reduction of biased decisions, from data collection and input to data processing and output. One strategy would be to establish uniform and informed consent based on personal connections and confidence in data workers, as well as clarity about potential downstream applications. Data distortions due to infrastructure problems and technology usage patterns that cause datasets to be inaccurate representations of people and phenomena are common; data incompleteness due to models that favor a small group of individuals in a society due to financial and social limitations. Data has to be designed and the algorithms are to be trained by making model results fair, as well as the disparities in literacies, economics, ethnicity, classes and infrastructure in India that obstruct access to such fair outcomes.

Initiating Fact based Decisions
Leaders may evaluate if the proxies employed in the past were appropriate, and how AI can help by revealing long-standing biases that may have gone unreported, as AI exposes more about human decision making. Aside from giving definitions and employing statistical approaches, it's critical to examine when and how human judgment is required. We must use AI ethically to improve conventional human decision-making in a variety of ways. Variables that do not properly predict outcomes are ignored by machine learning algorithms (in the data available to them). Humans, on the other hand, may lie about or even be unaware of the reasons that led to their decision. We must use AI ethically to improve conventional human decision-making in a variety of ways. Fact-based decision-making should become embedded in the company's DNA. AI can find all the needles in all the haystacks of data it is trained on, but it is up to the business experts (people) to select which of the outputs are relevant to the change the company is attempting to implement.

<u>Setting up standards of data that are relevant for use in the Indian Context</u>
Due to the data intensive nature of AI, the more quality data that is fed to it, the better it is. However, the keyword here is 'quality'. Mislabeled, unrepresentative, incomplete or untidy data can become a cause of bias and bugs in the AI Model. It is thus suggested that the following questions be asked before the deployment of the AI:

- Is this dataset representative of different variables within the population?
- Is this dataset generated by an unbiased individual or group?
- If yes, are there adequate safeguards in the case of inevitable exceptions
- Does the model attach importance to variables that are not relevant to the problem at hand?
- Is this dataset optimized and formatted for readability by the AI program?
- Is this model created to take decisions itself, or help humans take decisions?

Principle of Transparency, Responsibility and Accountability

Responsibility refers to the condition of being answerable to the consequences of one's actions. In the context of AI, this could come in the form of being held liable for any harm caused to another person or community due to the actions of an AI. While accountability refers to the ability to hold the creators, designers, developers or deployers of an AI Model responsible for the effects of their AI System.

Governments evaluating the possibility for "accountability gaps" in existing legal and regulatory frameworks that apply to AI systems should take a balanced approach that promotes innovation while minimizing the danger of substantial individual or societal harm. Because transparency allows for better examination of an AI system, transparency is frequently addressed in talks about AI accountability.

Accountability, on the other hand, does not always rise or improve as a result of more transparency. Transparency alone will not provide better accountability in the absence of robust procedures, principles, and frameworks. Artificial intelligence (AI) is portable cross-border. It's created and used in a variety of countries, and in ways that cut over international and cultural borders. Digital asset distribution and mobility are challenging to control. Because of the "black box" nature of AI, it's an inscrutable conundrum to figure out how or why an AI makes the judgments it does, as well as the complexity of building an "unbiased" AI, deploying accountability in AI is a difficult task.

The importance of increasing diversity cannot be overstated. One of the things that must happen, in my opinion, is for individuals who are impacted by AI technologies to take a larger part in the development and regulation of such technologies. The first stage is to establish a cause of action, and an opaque AI system combined with a huge number of interrelated elements underlying individual choices makes attribution of errors and assigning liabilities challenging to ensure accountability (Ciarán Daly 2017).

There are trade-offs between explain ability and the accuracy of a system. There will be times when having explainable AI is so critical that we are ready to tolerate any compromise in terms of the system's accuracy. Data poisoning, which occurs when attackers train AI models on mislabeled data, is another related behavior. Developers and consumers of AI should be given clear instructions. Some steps to be created include establishing baseline standards for AI developers, as well as certifications for auditing and testing to ensure transparency and ethical responsibility.

A 2016 US report on AI, automation, and the economy emphasizes the need of ensuring that the potential advantages of AI are distributed fairly and to as many people as possible. The dominance of large companies, which are driving not just the development and deployment of AI, but also the debate over its regulation, may limit the impact of emerging technologies like AI on human rights, democracy, and the rule of law. The infrastructures via which public debate takes place are controlled by tech firms. Citizens, particularly the younger generation, are increasingly turning to sites like Facebook and Google as their primary, if not exclusive, source of political information.

Machine learning helps us to extract information from data and uncover new patterns, and it has the ability to transform seemingly harmless data into sensitive, personal information. AI has significant implications for democracy, as well as people's right to privacy and dignity.

Models and algorithms are required to allow AI systems to reason and explain actions based on accountability standards. Deep-learning algorithms currently lack the ability to relate decisions to inputs, making it impossible to describe their actions in meaningful ways. Both the role of guiding action (by developing beliefs and making judgments) and the function of explanation are required to provide accountability in AI systems (by placing decisions in a broader context and classifying these in terms of social values and norms).

Responsible AI and Legal Personality

AI is a complicated and rapidly growing area that, in the perspective of the uninitiated, may appear impossible to govern. Furthermore, the application of AI can amplify current organizational risks, alter how they appear, or even introduce new risks into the organization. Given the complexity and speed of AI solutions, the difficulty in controlling AI is less about dealing with totally new forms of risk and more about current risks being harder to identify in an efficient and timely manner, or presenting themselves in novel ways. The first stage is to establish a cause of action, and an opaque AI system combined with a huge number of interrelated elements underlying individual choices makes attribution of errors and assigning liabilities challenging. There are no rules on how many legal rights and duties something must have to be called a legal person, but the most common requirements are the right to own property and the ability to sue and be sued. The legal personhood of a human being is generally accepted as a natural phenomenon. An examination of political and theoretical approaches to the challenge of AI recognition as a legal matter reveals that there is now no consensus on this issue. As we suggested in the opening, it would be appropriate to approach the subject of legal personhood from the standpoint of widely held reasons against it. In terms of actual protection of legal interests, social recognition for non-typical legal persons (everything except humans and corporations) is equally essential. (Dremliuga, Kuznetcov, Mamychev 2019)

It may appear obvious that a machine could never be a real human. Slaves and women, on the other hand, were not recognized as complete individuals for decades. Temple idols have had the status of legal people in India for decades. They've also used their "human" rights to pursue legal disputes through the trustees or governing board of the temple where they're worshipped. In India, the status of AI as a legal entity is still up for debate.

The first robot homicide was recorded on July 4, 1981. At the Kawasaki Heavy Industries facility, an engineer named Kenji Udara was performing routine maintenance on a robot. The robot was not entirely turned off by Kenji. As he approached a restricted section of the manufacturing line, the robot recognized him as an impediment and flung him against a neighboring machine with its strong hydraulic arm, killing him instantly. (Whymant 2014)

Thus, Artificial intelligence entities must be regarded as legal entities in order for them to be held accountable in the same way that businesses are. If we draw an analogy from the reasoning for giving companies legal personality, which was to restrict corporate liability on an individual's shoulders, thereby motivating people to engage in economic activity through corporations. The question of whether an AI may be granted legal personhood boils down to whether it can be given legal rights and responsibilities. The legal fiction devised for corporations serves as a model for providing legal personality to artificial intelligence. However, there is a distinction to be made between corporations and artificial intelligence. Corporates are ostensibly independent but responsible to their stakeholders, whereas an AI might be really autonomous. Legal personhood for AI should only come with obligations. Though it may appear appealing on the surface, but there would be some apparent issues if the duties were meant to solve accountability deficiencies.

Principle of Privacy and Governance

AI systems rely on enormous quantities of training data, and using an individual's personal data raises significant privacy problems. As per the unenacted Personal Data Protection Bill of India, 'Personal Data' refers to data about or relating to a natural person who is directly or indirectly identifiable, having regard to any characteristic, trait, attribute or any other feature of the identity of such natural person, or any combination of such features, or any combination of such features with any other information.

For example:

Consider this statement: "My Name is Raghav Saini, I live in Rampur, Uttar Pradesh, India.

This statement provides the author's name, and location thus making it extremely easy to identify him, thus this would be considered a piece of personal data. Other examples of personal data could be things like address, education, interests, etc.

Due to a lack of sufficient privacy measures, technology may be able to completely capture and analyze an individual's personal life without their consent or awareness, causing substantial harm to an individual's interests by disregarding their data usage choices.

Punjab's law enforcement agencies deploy the Punjab Artificial Intelligence System, which employs a "smart policing" strategy by digitizing criminal records and facilitating criminal searches by utilizing technologies like as face recognition to forecast and detect criminal behavior. Following a New York Times article, Clearview AI, a start-up located in the United States, garnered worldwide notice. The firm developed AI models to recognize persons from over 3 billion pictures collected from social media sites and then sold the technology to law enforcement. Several civil rights organizations in the United States have expressed concerns, notably about acknowledged flaws in face recognition technology and the prospect of widespread monitoring for malevolent intentions. The firm was also sent with a 'cease-and-desist' letter by the social media platforms from where the data was scraped for breaking the terms and conditions for data usage. (Accenture 2021)

Privacy by Design and Default

Means nothing more than "data protection through technology design." Behind this is the thought that data protection in data processing procedures is best adhered to when it is already integrated in the technology when created. This could be in the form of making sensitive data unreadable to humans but readable to the technology involved. (Spiekermann 2012)

For example:

Consider this statement: "My Name is Ishan Puranik, I live in Thane, Maharashtra, India and I am interested in Technology, Marketing and Law"

From this simple statement, the author's name, location and interests can be elicited, although a simple statement, this is a gold mine of information for ad companies, they now know what kind of ads the author is more likely to engage with, thus boosting their utility to their clients. Now imagine if instead of name, location and interests, the data was name, sexuality, religion, financial status, address and political leaning. In the wrong hands that data could potentially put the author in danger, and even if danger is not the issue, most of that information is of a highly personal nature that the author may not be comfortable with being shared.

If a privacy by design and default system is applied, then a lot of the data is protected from human eyes.

Pseudonymization of Data

This means the replacement of stored data by some sort of artificial identifier, in the Personal Data Protection Bill, Pseudonymization of Data is referred to "'Anonymisation' and is defined as: relation to personal data, means the irreversible process of transforming or converting personal data to a form in which a data principal cannot be identified, meeting the standards specified by the Authority. (Personal Data Protection Bill 2018)

For Example:

The earlier statement given above could potentially look like this after pseudonymization:

"My Name is **Gvrhaliisa**, I live in **Prmua, TtruraHerapsd, Dinia** and I am interested in **Aljouvsvnf, ThyrlapunhukShd**"

The sensitive data is now protected by some sort of code that only the machine processing such data can read. The above example represents only one of the ways.

Generality, Indifference and Diverse Approaches

Both technology firms and governments promote AI as a solution for complicated issues such as hate speech, violent extremism, and online disinformation. Given machine learning's poor ability to grasp tone and context, this is a hazardous development.

AI has a significant influence on freedom of speech, given the growing dependence on these systems for online content regulation and the rising usage of AI applications in everyday life, ranging from smart assistants to autocorrect technology on mobile devices.

Under Indian constitutional law, freedom of speech and expression is a basic right. It has been cited by the Supreme Court of India as an essential component of democracy, and it has also been determined that this freedom encompasses the right to know. The likelihood of one's privacy being compromised is minimal if intrusive face recognition technology is incorrect. However, in the case of applications currently in use by law enforcement in India, this exacerbates the problem because, in addition to privacy concerns, these technologies can lead to false arrests and the forced proof of innocence of people from disproportionately vulnerable and marginalized communities.

In one of the recent instances, where the privacy and AI has soared and debated is in the Data breach case of AIR India hackers access personal details Of 4.5 Million Customers where causing alarming concerns. Customers who enrolled between August 2011 and late February 2021 were affected by the incident, which was confirmed two months after SITA's Passenger Service System (PSS) was compromised, according to Air India. Customers' names, dates of birth, contact information, passport information, frequent flyer data, and credit card information have all been compromised.

The right to privacy was unanimously recognized as a basic right under the Indian Constitution by the Supreme Court of India in August 2017. This landmark decision acknowledged informational privacy as a component of this basic right, as well as the threats posed by computers' ability to infer information and analyze data in new and sophisticated ways. The ruling also emphasized the country's urgent need for a "strong data protection system," highlighting the operation in an embedded system between data protection and autonomy.

In AI systems, corporate governance is critical for developing and enforcing policies, processes, and standards. Chief ethics and compliance officers have a critical role in identifying ethical concerns, managing such risks, and assuring standard compliance. To oversee and monitor the organization's operations, governance structures and processes should be developed. Currently, there is no comprehensive AI regulation in India. The proposed Personal Data Protection Bill (2019) (PDP), which is meant as complete law detailing different aspects of privacy safeguards that AI solutions must comply with, comes the closest. Limitations on data processing, security precautions to protect against data breaches, and specific protections for vulnerable users such as minors are also included.

Principle of Reproducibility and Transparency

In 1999, Eric S. Raymond published a seminal book titled 'The Cathedral and the Bazaar' that was a fierce advocate for open-source software. One of the key tenets of Open-source software is that the source code of any software program be made available to the public at large, and study, modify and build upon. Open-source software is the epitome of Transparency in the matters of technology. In the realm of AI and its algorithms, making something transparent is not as easy as just releasing the source code of the same. (Haibe-Kains et al. 2020)

In the realm of Machine Learning Algorithms, the data that is used as to train an algorithm is as important as the algorithm itself. This is a recurring problem within the Machine Learning community – i.e. many companies, independent researchers and students that work in the realm of AI create new knowledge, identify problems and develop newer methods of working, and release this knowledge in the form of publications in scholarly journals, magazines, blog posts, etc, but for many reasons they do not release the code that is being explained, this results in other companies, independent researchers and students being unable to utilise the fruits of this research's labour and building upon it through improvement, modification or addition. In some cases, the code is released but the data is not and this leads to a lack of **reproducibility,**

In The Cathedral and The Bazaar, the author mentions the something called "Linus' Law" which states that the more people that work on or study a particular code, the more likely it is that the code will be improved in quality and functioning (Raymond 1999). In the context of AI, the more an algorithm and its data is studied, the more likely it is that the embedded biases and problems can be pointed out, addressed and fixed. This was visible in the UK when a student performance estimation algorithm was made transparent and took in suggestions from the rest of the community which allowed the algorithm to improve in quality and serve its goals better. (Dickson 2021)

Suggestions for the improvement of transparency and reproducibility

In certain cases, the data that is used, or the code itself may be proprietary in nature and thus cannot be shared with the public at large, and in such cases, transparency cannot be enforced, which it makes it difficult to scrutinize, validate and improve algorithms. In such cases there should be a system through which the validation and reproducibility of an AI Model can be confirmed. This can be done in the following manner:

- Setting up an institution that is dedicated to the verification of transparency and reproducibility of a code.
- Inculcating the value of transparency and reproducibility in AI Education
- Creating standards for publishers of AI research (such as journals, colleges, universities) that will necessitate the presence of certain qualities within a piece of research before publication, exceptions to these standards can be decided on and granted by the institution mentioned under point 1.
- Creating a robust sharing platform for AI Research in India (Like or better than Shodhganga for example)

What Is the Future of Responsible Artificial Intelligence?

In an optimal desired future, both technology and human characteristics are integrated. An ideal society is one where the business uses a data-driven approach to handling moral issues, recognising progressive innovators, qualitative work, and more difficult-to-measure breakthroughs that repay over longer time frames. For products and technology, this may imply extending the time range within which performance targets are set, while keeping in mind that professional ethics may necessitate a broader or lengthier period of time. People would be accountable for recognizing the diverse skills required to support true responsible-AI deployment and encouraging creative behaviour.

A desirable corporate culture is one where there is no fear of retaliation or punishment for disclosing ethical concerns from within, there really are clear pathways for concerns to be raised, and departments can pull in persons with particular expertise as necessary. Management must identify beliefs and ethics, communicate those activities must be consistent with all these standards, and offer resources to sustain those procedures.

Suggestions for a Responsible AI

Human in the Loop Processes

In order to solve some of the major issues, many developers deploy humans at different stages of the AI Lifecycle (i.e. the process from conception to deployment). This is known as a Human in the loop approach. HITL means that a human being's judgement and interaction is required before the process continues to the next step. HITL in machine learning refers to the stages of the model development process that requires a person to inspect, validate or change some part of the process to train and deploy a model into production.

E.g., An engineer verifies the prediction before moving it to the next stage of development. OR a human structuring or tidying data that is received before putting it into the bot.

From start to end, Humans have a role to play in the AI lifecycle, from the development where Quality Control is required, to the integration of the finished product with the organization requesting the services. AI is a machine that can fail and thus humans must be ready to mitigate risk and damage control.

Comical Example: In the show of Silicon Valley, an AI Program deletes a large amount of content from a video sharing website due to the files not matching the required standards.

Examples of Human in the loop usage:

- Collecting data, building and refining the datasets
- Annotating collected and refined data
- Fixing failures or mistakes when they occur,

Encouraging Research

The construction or growth of well-funded centres of excellence, which would act as drivers of research and development and harness synergies with the business sector, is crucial to the execution of national AI policies. The availability of highly educated individuals, world-class educational institutes, and an illustrious list of top-notch IT firms dominating the global IT scene are all required building stones for India to establish a robust AI research and development ecosystem. An examination of India's capabilities in AI core research presents a bleak picture. According to the Global AI Talent Report 2018, which analyzed LinkedIn, India has just 386 PhD-educated researchers out of a total of 22,000 globally, and is placed 10th. The perspectives of stakeholders on which application challenges to focus on will be critical in ensuring the research's practical usefulness. While the figures indicate a modest but promising basis, a coordinated effort is required to develop a complete AI strategy for India that is focused on research in order to achieve a Responsible India. The focus of AI research should be on monitoring the impact of AI technologies developed at the consumer level through social indices and recommending necessary changes for better market penetration, as well as studying the financial viability of AI technologies developed so that they cater to the target consumer base while proposing improved pricing models for a pan-India reach.

Coordinating the drivers of change from within and outside of the organisation

External groups, either intellectual institutions or industrial research organisations, are a vital component for quality standards and recommendations, but they must be adjusted and utilized in ways that are appropriate for each firm and meet the difficulties it is most prone to incur. Administration standards should explicitly demonstrate why they are in existence and provide little space for interpretation, that can lead to the thorny issue of "exceptions to the rule." This helps ensure that teams from different functionalities, including leadership, business analytics, and law, are aware of the prerequisites and benefits of each.

Adequate Financing and Investment in Research and Development

AI indicates that governments are making considerable financial investments in AI research and development. In the battle for AI development, most strategy papers emphasize the need of safeguarding national objectives. To accomplish so, a national strategy for AI research and development is required, as well as the identification of nodal entities to facilitate the process and the building of institutional capacity to conduct cutting-edge research. Beyond the base financing by the Government, the National Strategy Report observed that the ICTAIs should seek additional funding from charitable and private sources, preferably through an equity sharing arrangement. ICTAI Inc. may also grant additional funds to ICTAIs based on their performance.

Data that is clean, correct, and properly curated is critical for training algorithms. Importantly, having a big amount of data does not guarantee superior outcomes. Quantity of data should be predicated on data accuracy and compilation. Organizations that go through this process also build the mechanisms necessary to show the long-term value of Responsible AI by expanding it across the company, allowing them to make the crucial step of putting principles into reality.

Successful corporations and organizations should use AI models, methods, and platforms that are designed to be trustworthy, fair, and transparent. The MLs are to be trained to be better positioned to establish cross-domain consensus on mitigation methods such as recognising biases in the Indian situation such as caste, class, ethnicity, and so on, by using proven qualitative and quantitative approaches to analyze possible hazards as in Indian scenario like caste, class, ethnicity, etc.

Access to data that is trustworthy, accurate, and relevant is a major issue in AI. As a result, acquiring high-quality health data from other countries and using what has been learned in India might be a viable option. One method to allow access is to use robust open data sets. For tiny start-ups building prototypes, open data is very crucial. Despite the fact that India is a data-rich country with a National Data and Accessibility Policy, it lacks strong and comprehensive open data sets across industries and areas.

Regulation of certain values more than others

Each AI development and deployment provides an advantage to the society as well as the party that is responsible for the provision to society. **[2]**

Thus when it comes to the assessment of a hierarchy in the context of responsible AI, then we should rank the importance of these values on a scale of most impactful to the society to least impactful to society. Those that are most impactful on society should be more heavily regulated.

Following this logic, the values of fairness, responsibility and accountability should be held to higher standards than transparency and reproducibility.

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[2] In the theory of intellectual property rights, there is an ever-developing answer to the question of who should get the benefits of protection, the creators or the society at large. If creators are given too much protection, then it reduces the ability of the society to utilise the creation properly. For example, if a revolutionary invention is patented and then sold at an incredibly high price, then the society does not benefit, on the other hand, if the society is given too much protection, then there is a lack of incentive for the creators to continue creating original works. And thus, it is important for this to be balanced properly.

- Unfair AI can propagate and intensify human biases and thus should be held to extremely high standards, and thus should have the highest position in the matter of a vertical hierarchy.
- It must be acknowledged that not all developers and designers will have altruistic motives and thus there should be a penalty for failing to uphold the standards created to ensure fairness, and thus the standards of responsibility and accountability should be at position 2 and 3 respectively, this because accountability is essentially a framework to enforce responsibility.
- Finally, for India to become the AI Garage of the world that it aims to be, it is important for it to emphasises on research. Research will greatly benefit from transparency and transparency and reproducibility.

Finally, broaden the concept of quantifiable value in order to shift from a short-term to a longer-term outlook while simultaneously acknowledging the relevance of the indescribable. If enterprises are to truly create value-driven tech, their organisational structures must develop to achieve these ambitious goals.

Conclusions

As the potential and perils of Artificial intelligence are expected to affect nations, businesses, and social groups, authorities must be vigilant in not just leveraging Artificial intelligence for productivity expansion but also putting in place rules and regulations to protect individuals from the dangers posed by Artificial intelligence.

Insurance, credit, recruiting, and even what news one reads on social media are all constantly influenced by algorithms. When a search engine like Google prioritises one search result over another, it's because an algorithm determined that one page is more valuable than the other. When your favourite OTT platform suggests one movie over another, an algorithm based on your viewing experience made the recommendation. Artificial intelligence is already driving our cars but still this is just the beginning and AI is still in its early stages of emergence.

As a result, it is critical to concentrate on rules and standards that remain flexible as new opportunities and difficulties arise. This is especially important given that Automation is multi-purpose in character. It is also critical that governments work together at several levels—administration, research, social order, and business—to build legal regimes that meet the difficulties and hazards brought by Artificial intelligence. Given the scope of dangers that Technology can create to a nation's security and integrity, the consequences of conflicting rules across nations and operating in divisions could be massive.

Any legislation should be formed after a discussion on the elements, such as how severe standards ought to be. Since there are contradictory meanings, what should be the definition of fair treatment? How should issues of security be resolved? However, when establishing standards, it is critical to consider the potential cost of not adopting an AI solution when one is present, as well as the levels of comparative safety performance at which AI solutions should be employed to replace the conventional ones. Artificial systems may make errors, but so do humans, and in certain situations, Intelligence may be better than solutions that do not use It, even if it is not fail-proof (Benkler 2019).

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