Recommendations Report on the Draft Paper for Responsible AI by NITI Aayog dated 21.07.2020

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Synopsis. The recommendations report drafted by the Research Members of the Indian Society of Artificial Intelligence and Law has been submitted to the NITI Aayog, Government of India on the call of request for recommendations of the Draft Paper published by the body on July 21, 2020 on Responsible AI. The report includes an Executive Summary by Mr Abhivardhan, Chairperson & Managing Trustee. The report is published on August 10, 2020.

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Indian Strategy for AI & Law, 2020 – Recommendations Report

1 Executive Summary

A Responsible AI would have a central understanding of procedure and modalities when it comes to a nation-state. In matters related to the juristic persona of AI, it is highly recommended that nation-states – especially developing states must have concrete and replenishable decision-making bargain, so that the global participation and perambulatory discussions and confidence-building measures in terms of global approaches towards AI are embedded in plurilateral values, to reform the digital consequences of AI-based limited globalization. The paper espouses considerations into the same scope of what a Responsible AI can be, and how India can adopt the same in a global capitalist scenario. I must congratulate Ankita Malik and Nav Dhawan for their stupendous efforts to contribute and support for the same initiative and provide recommendations with a reasonable degree of research.

Abhivardhan
Chairperson & Managing Trustee

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2 Introduction

The Draft for Discussion for Responsible AI for All by NITI Aayog was recently placed in the public domain for discussion, inviting comments and recommendations upon the same. This stems from the shift in emphasis of the government towards development of resources in order to exploit the potential of Artificial Intelligence. The document lays down the economic and sectoral potential of AI wherein there is a predicted boost to the growth rate by 1.3% by 2035. Considering this potential, the government is aiming at accelerated adoption of AI into the various domains, focusing on AI deployment in the mechanisms of the government while maintaining a coordinated approach from the private sector, startups & academia.

The national strategy is aimed toward 'Total Innovation'[1] which includes an array of policy innovation, technological innovation, organizational innovation and so on. While the benefits of the amalgamation of AI into the system are substantial, the perils caused by the same cannot be ignored. The problems which India faces in the current times has many parallels to draw from the international front, as many nation states are grappling with similar problems. It ranges from the impact on labour markets, financial systems & inequality to human rights, privacy, dignity & bias.[2]

The working document further tries to analyze the challenges at hand by categorizing them on the basis of their impact i.e. Direct & Indirect impact, into System Considerations & Societal Considerations. The first part of this article aims to analyze the former, while the second part would analyze the latter along with the various recommendations contained therein.

3 System Considerations

3.1 The AI Black Box Problem, Exclusionary Risk and Machine Bias.

One of the foremost aspects, which are required for building trust within the artificial intelligence systems, is for users, endpoints and other parties involved, to understand how artificial intelligence comes to a certain conclusion. If the methodology followed for the decision-making process is known, it ultimately affords more reliability and credibility to the decision. However, the problem arises when the there is a lack of information with regard to how the particular AI reached a particular conclusion. This can be categorized within the scope of the "Black Box" problem wherein, due to the deep neural network operating, with the help of artificial neurons, processes such complex data that it makes it close to impossible to ascertain how the decision was

[1] NITI Aayog, 'Working Document: Towards Responsible AI for All', <https://niti.gov.in/sites/default/files/NITIAyog_Presentation.pdf> accessed 7 August 2020

[2] Scientific Foresight Unit (STOA), European Parliamentary Research Service, 'The Ethics of Artificial Intelligence: IssuesInitiatives',<https://www.europarl.europa.eu/RegData/etudes/STUD/2020/634452/EPRS_STU(2020)634452_EN.pdf> accessed 7 August 2020.

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concluded. [3] Another reason for the same is the issue of dimensionality, for which support vectors are used by the AI and the same cannot be visualised by humans. This also can lead to the black box problem.[4] Therefore, as rightly pointed out in the working document, there might be instances where spurious correlations could be in course, which would not create errors in the dataset, however, it could prove to be a problem during deployment, especially since the correlation cannot be discerned, thereby creating a policy problem. This is based on the recognised principle that there needs to be transparency for credible functioning and deployment. In terms of completely opaque decision-making process, the severity of the problem is graver as the weaker black box problem can still be reverse engineered.[5] However, various legal principles and doctrines would fail if the same is not regulated. Taking the example of the intent doctrine, the intent of the party plays a key role in various aspects of liability as well as understanding the decision-making process. However, in cases of a stronger black box problem, the programmer may not be able to predict or recognise how and why a decision was made by the AI.

This can in turn also result in incorrect decisions, which cannot be traced, thereby leading to exclusion of certain members of the society from benefits that they are entitled to by the State.[6] This can be seen from an example wherein the Artificial Intelligence used, acted in a discriminatory manner wherein the primary aim for it was to predict recidivism in order to aid in the process of decision making in terms of grant of bail. However, the result concluded by the AI could be discriminatory or biased on a racial basis to a large extent.[7] This also stems from the problem of Machine Bias. Most issues within the systems considerations have an undeniable association and can have overlapping impacts.

Machines are not inherently biased, the bias results from the datasets used and an inquiry into the datasets used, offers an explanation in to the bias that a machine has incorporated over a period. IBM has been developing methodologies which would help in reducing machine bias even when these training datasets are not available, where the a three level rating system is used for ascertaining the level of relative fairness by rating the same on the parameters of presence of bias, inheritance of bias and capability to introduce bias regardless of the data.[8]

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[3] Yavar Bathaee, 'The Artificial Intelligence Black Box & the Failure of Intent and Causation', 2018, 31 Harvard Journal of Law & Technology, <https://jolt.law.harvard.edu/assets/articlePDFs/v31/The-Artificial-Intelligence-Black-Box-and-the-Failure-of-Intent-and-Causation-Yavar-Bathaee.pdf> accessed 8 August 2020

[4] Ibid [934]

[5] Ibid [934]

[6] NITI Aayog, Working Document [n1] 11.

[7] Julia Angwin, Jeff Larson, Surya Mattu and Lauren Kirchner, ProPublica, 'Machine Bias',<https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing> accessed 8 August 2020

[8] IBM THINKPolicy Blog,'Bias in AI: How we Build Fair AI Systems and Less-Biased Humans', <https://www.ibm.com/blogs/policy/bias-in-ai/> accessed 7 August 2020

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In order to solve a problem, the problem must first be understood. The legality with regard to AI and the black box problem cannot be solved entirely by technological solutions. Therefore, the first step should to be for policy makers to understand the various aspects of cross-disciplinary uses of opaque systems. One such example is the course of 'The Ethics & Governance of Artificial Intelligence'[9] wherein it focuses on analysing the nuances of algorithmic decision making, autonomous systems and seeks to find a balance between regulation and innovation. Apart from education in this domain, another solution would be working towards a system wherein the technology is tweaked in a manner so as to produce largely explainable results. This draws from the Explainable AI program being run by the Defense Advanced Projects Agency, wherein it seeks to create prediction accuracy while explaining the rationale behind the decisions and simultaneously aiming to develop human interface into the process. [10]

In terms of transparency and its achievability, a source to draw from is the General Data Protection Regulation (GDPR).[11] Article 13 of the GDPR provides for a system of consent along with a system of checks and balances by also maintaining accountability upon the controller. Further a combination of the Articles 14 and 13 provides plausible solution for the problem of reliability in terms of deployment due to the black box problem.[12]

3.2 The Accountability Dilemma

The working document recognises that assigning accountability for the harm, which has arisen, from a specific action of the Artificial Intelligence is a challenge. One argument in such a situation is with regard to the application of liability principles in cases of assigning accountability. The very nature of AI makes it difficult to simplify its internal function and, in the future, the most certain and available trajectory would be to develop more complex functions to achieve solutions to more complex problems. Therefore, if restrictions are imposed on the manner in which the AI functions, it would inadvertently act as a break on the wheels of progress. Therefore, the policy needs to take into consideration that if the black box problem cannot be completely eliminated, then pre-existing rules may be customised for the same. One such possibility is that of the principle of Vicarious Liability. This principle cannot have a blanket uniform application wherever credibility has been compromised. However, the same can be applied with a *pro rata* approach. In terms of circumstances where the AI was designed to achieve a specific task or the probability of externalizing failure on others is higher, would attract a stricter application of the liability principle. For situations where the probability is lower, the test of foreseeability could help determine as to whether the consequence, which occurred, was apparent or reasonably foreseeable.

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[9] Harvard Law School, 'The Ethics & Governance of Artificial Intelligence', <https://hls.harvard.edu/academics/curriculum/catalog/default.aspx?o=71157> accessed 7 August 2020

[10] Dr. Matt Turek, Defense Advanced Research Project Agency, 'Explainable Artificial Intelligence(XAI)', <https://www.darpa.mil/program/explainable-artificial-intelligence>, accessed 8 August 2020.

[11] General Data Protection Regulation, (EU) 2016/679

[12] Ibid, Art. 13 &14

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This approach has a certain level of ambiguity in order to provide space for a case to case application. This is especially precedented in cases which attract criminal sanctions. The severity of criminal liability may lead to debilitating effect on the advancement of more powerful Artificial Intelligence, if the system engineers would be subject to criminal sanctions, without considering the circumstances revolving around the decision/act of the AI.

3.3 India's Readiness for AI incorporation

India's overall capacity and readiness plays an important role in determining where policy would require the most amount of work. India ranks 17th in the Government AI readiness index compiled by Compiled by Oxford Insights and the International Development Research Centre.[13]

As the working document states, there are laws which exist such as the Consumer Protection Act[14] or for a more specific example, SEBI's circular on AI/ML applications[15] however, the intent of most of these legislations and laws was focused around solving the problems relating to security and privacy. However, even though the problems remain similar, their nature has seen a shift with regard to AI. The privacy issues, which existed earlier, are different from the privacy issues of AI, therefore, the law will face difficulty in case pre-existing rules without customization are applied. Therefore, the regulations should be developed with an 'adaptive & anticipatory' approach.[16]

4 Societal considerations

4.1 Artificial Intelligence & the Impact on Jobs

In 2016, AI was dubbed as the "fourth industrial revolution" by the World Economic Forum, that has drastically transformed the way we live, interact and work[17]. Majority of the tech giants and digital natives are deploying AI to augment the human ability to perform tasks more precisely and efficiently with the decision control held exclusively

[13] Oxford Insights and the International Development Research Centre, 'Government Artificial Intelligence Readiness Index 2019', <https://www.oxfordinsights.com/ai-readiness2019> accessed 9 August 2020

[14] Consumer Protection Act, 2019 (India)

[15] Securities & Exchange Board of India, Reporting for Artificial Intelligence (AI) and Machine Learning (ML) applications and systems offered and used by market intermediaries, SEBI/HO/MIRSD/DOS2/CIR/P/2019/10

[16] UNESCAP, 'Artificial Intelligence in Asia and the Pacific',<https://www.unescap.org/sites/default/files/ESCAP_Artificial_Intelligence.pdf> accessed 9 August 2020.

[17] Davos Klosters, 'World Economic Forum Annual Meeting 2016 Mastering the Fourth Industrial Revolution' (WE Forum, 2016) <http://www3.weforum.org/docs/WEF_AM16_Report.pdf> accessed 9 August 2020

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by humans or shared with machines. Rise of AI is expected to boost economic growth; however, multitude of current business models will be disrupted and millions of existing jobs will be automated.

Advancement of AI will affect the job prospects of large and young population of India. There are 17 million new entrants into the workforce year on year in comparison to the 5.5 million job created[18]. It shows that the employment scenario in India is worrisome and rapid AI advancements are expected to provide further hurdles to this situation.

A Teamlease Service Study estimates that 52-69% of repetitive and predictive roles in sectors such as IT, manufacturing, transportation, financial services, packaging are exposed of being automated in the next few years. A 2013 study by Carl Frey and Michael Osborne conveys that "middle skill" jobs that require manual and routine cognitive application would be completely automated in the coming years[19]. Thus, India will have 69 percent of its jobs in formal employment at risk of being automated by 2030.

It is predicted that AI will have a severe impact on jobs in the short-term. However, in the coming years, the impact will start to even out as there would be new role substitutions and new job creations. A study from McKinsey Global Institute recons that subject to various adoption scenarios, automation will displace jobs ranging from 400 to 800 million around the world by 2030, which would require as many as 375 million people to switch job categories entirely[20]. A report by EY states that by the year 2022, 9% of the estimated 600 million workforce would be employed in jobs that do not exist today, whereas 37% would be deployed in jobs that have a radically altered skill requirement[21]. It is expected that certain types of jobs will shrink as they get automated, production efficiency will correspondingly increase, creating a demand for other types of jobs related to it. According to an Accenture report, AI possesses the potential to add US $957 billion to India's economy by 2035[22]. How can a developing economy like India with a huge population adapt for such a change and reap the benefits?

The Indian government should be proactive to collect data relating to the employment scenario to better prepare for AI. Estimates of employment variables could be prepared through household surveys, surveys of business/enterprises, administrative

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[18] 'Future Jobs in India', (FICCI, 2017) <http://ficci.in/spdocument/22951/FICCI-NASSCOM-EY-Report_Future-of-Jobs.pdf>

[19] Carl Frey and Micheal Osborne, 'The future of Employment: How susceptible are jobs to computerization?' (Oxford Martin, 2013) <https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf> accessed 9 August 2020

[20] 'What the future of work will mean for jobs, skills and wages? (Mckinsey, 2017) <https://www.mckinsey.com/featured-insights/future-of-work/jobs-lost-jobs-gained-what-the-future-of-work-will-mean-for-jobs-skills-and-wages> accessed 9 August 2020

[21] n 20

[22] Rekha Menon, Madhu Vazirani and Pradeep Roy, 'Accelarating India's Economic Growth with Artificial Intelligence' (Accenture 2017) <https://www.accenture.com/_acnmedia/PDF-68/Accenture-ReWire-For-Growth-POV-19-12-Final.pdf#zoom=50?> accessed 9 August 2020

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sources and data from government schemes[23]. The Government could also conduct periodic economy-wide skill gap analysis to prepare the labour market for future, dominated by AI, bots, etc[24]. This would allow for data driven policies by tracking new developments in job scenario of the country.

With over 50% of the India population under 25, an appropriate step would be to expose the young workforce to AI interfaces and machine learning. Online training shall be encouraged and education curriculum shall be evolved to prepare the students for the impact of AI. The current education system seems to be providing an output of low-employable students[25]. Revamp of the curriculum, teach training and improvements in infrastructure are necessary in these times, the new national education policy (NEP 2020) is a step in the right direction.

The massive consumer market of India can be leveraged to access latest technology through assertion of technology transfer during FDI deals. Global firms should be encouraged to transfer advanced technology, create joint ventures and assist Indian firms, which would allow Indian firms to compete in areas of artificial intelligence, robotics, etc.[26]

The government could boost employment in the areas which are less vulnerable to automation. Education and Healthcare are such sectors which involve high human engagement which cannot be automated easily. Jobs in sectors like arts and entertainment are interpersonal and creative, and not under immediate threat of automation. Labour intensive industries such as tourism could be pushed with some aggression as India ranked 34th in the Travel and Tourism Competitiveness Report 2019[27], with much improve more improvement to grow. These sectors could be boosted to increase the said sectors' capacity to create jobs.

The government should set-up career counselling centres to enlighten the unaware youth about the changing dynamics and new possibilities in the job scenario.

Providing a boost to the start-ups can be very beneficial in these changing job scenario as small enterprises, instead of big factories, seem to be an area which can be exploited for proving more jobs in the future. India has a large unorganized and informal sector, start-ups can provide business models to address with the inefficiencies in various sectors and end up generating vast job opportunities. Higher procurement of goods and services from domestic start-ups by the Government could boost entrepreneurship. Moreover, entrepreneurship courses provided by universities[28] could also lift

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[23] Ila Patnaik, 'Narendra Modi and jobs: It's all about data, and how it's calculated' (The Print, 2019) <https://theprint.in/ilanomics/narendra-modi-and-jobs-its-all-about-data-and-how-its-calculated/205205/>_accessed 9 August 2020.

[24] n 20

[25] ibid

[26] ibid

[27] Lauren Calderwood and Maskim Soshkin, 'The Travel & Tourism Competitiveness Report 2019' (WE Forum, 2019) <http://www3.weforum.org/docs/WEF_TTCR_2019.pdf> accessed 9 August 2020

[28] 'Indian Universities, Colleges to Soon Start Entrepreneurship Courses to Foster Startup Culture in Students' (Inventiva, 2018) <https://www.inventiva.co.in/stories/inventiva/indian-

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the start-up culture in India. The Government's Start-up scheme[29] is a step in the right direction and its implementation shall be aggressive to reach even the least advantaged groups.

Centers for excellence (CoEs) could be established that will use technology tools to develop standards and provide counselling for the youth for emerging jobs of future. Such centers must be established in every government university[30].

4.2 Psychological Profiling & Malicious Use

Psychology has never been considered an exact science. There is no admission of total precision in the results and there exist numerous conflicting approaches. There have been advancements in AI being made to provide as acute as possible psychological profiling of humans. However, the results have not always been fruitful. Machine learning algorithms are susceptible to bias. Northpointe's software is used in courts across the country and used to determine how likely a person is to commit crime in the future. According to a report by ProPublica, black people are almost twice as likely as white people to be labelled higher risk but they did not actually end up re-offending, while white people are twice as likely as black people to be labelled lower risk but went on to commit crimes[31].

The primary source of this bias is the training data. AI's prediction is as good as the data that it is fed. Bias can lead AI to make decisions which enforce systemic discrimination. In this way, AI has the potential to disrupt democratic norms. What could be then the solution?

Adequate legal response would be to pass adequate data protection law. The Srikrishna Committee provided a framework to begin the dialogue on algorithmic bias[32]. Individuals can be provided with the right to the logic of automated decisions. Such a right will potentially balance organisational interests with the need for algorithmic transparency.

Data collection of applications like Aarogya Setu should be transparent and limited for its use, to avoid situation like Cambridge Analytica scandal. It was stated in the MIT Technology Review that Aarogya Setu poses significant risks to the privacy of the user

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universities-colleges-to-soon-start-entrepreneurship-courses-to-foster-startup-culture-in-students/> accessed on 9 August 2020

[29] (Start Up India) < https://www.startupindia.gov.in/content/sih/en/startup-scheme.html> accessed on 9 August 2020

[30] n 20

[31] Jeff Larson, Surya Mattu, Lauren Kirchner and Julia Angwin, 'How we analyzed the COMPAS Recidivism Algorithm' (Pro Publica, 2016) < https://www.propublica.org/article/how-we-analyzed-the-compas-recidivism-algorithm> accessed on 9 August 2020

[32] 'A Free and Fair Digital Economy Protecting Privacy, Empowering Indians' (MeitY, 2018) <https://www.meity.gov.in/writereaddata/files/Data_Protection_Committee_Report.pdf> accessed 9 August 2020

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compared to similar apps in other countries and days later Union announced it would make the source code for the application public. This was a step in the right direction by the Government.

4.3 Equable Principles

AI raises concerns due to its potentially disruptive impact as discussed earlier. While these issues are significant, they can be addressed with correct planning, oversight and governance. An ethical framework seems necessary to curb the possibility of harmful AI; especially as intelligent technology becomes more prevalent in the products and services, we utilize daily.

The draft provides different groups that shape the future of AI. Each of these stakeholders have certain impact on the development and usage of AI. The draft proposes to develop principles for beneficial use of AI across these stakeholders, based on the considerations of these stakeholders. Various stakeholders are mentioned along with their indulgence with the AI. However, there are some other stakeholders such as NGOs which have an impact on AI as well and have not been considered in the consultation process of the principles pertaining to Responsible AI.

Non-state actors like NGOs should be included in the list of stakeholders. NGOs strive to protect and create awareness about the rights of the distressed in a society. Hence, they serve a noble purpose and are an integral part of the society. Many NGOs in India have been use AI to harness large amounts of data such as Akshaya Patra, which strives to eliminate classroom hunger by organizing mid-day meals, is using data analytics to serve children and utilize their funds more effectively. NGOs can also assist those members of the society who are affected by AI but do not have resources to voice their concerns. They are deploying AI to solve logistic problems such as figuring out the optimum route to deliver food[33]. NGOs also spread awareness on issues related to AI. The Public Voice have even come up with guidelines to enhance the use of AI, as part of their awareness scheme[34]. At the same time, there must be strong background checks to ensure that the participation of NGOs and Public Trusts is not tantamount to the national security imperatives in manner whatsoever.

The principles in the draft are formulated after consultation with stakeholders and considering the AI case studies from India and around the world, the Indian Constitution and International Standards for AI.

The consultation process could have included academics, scholars and reformers, who with their expertise in the field of AI can provide specialist insight on the issue of Responsible AI and guide the formation of principles with respect to it.

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[33] 'Accenture Labs and Akshaya Patra Use Disruptive Technologies to Enhance Efficiency in Mid-Day Meal Program for School Children' (Akshaya Patra, 2017) <https://www.akshayapatra.org/accenture-labs-and-akshaya-patra-use-disruptive-technologies-to-enhance-efficiency-in-midday-meal-program-for-school-children> accessed on 9 August 2020

[34] 'Universal Guidelines for Artificial Intelligence', (The Public Voice, 2018) <https://thepublicvoice.org/ai-universal-guidelines/> accessed on 9 August 2020

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The draft provides 7 principles to deter harmful impact of AI. There are no single set of principles which are followed around the globe. Many organizations have come up with such principles relying on different kind of information and data. But the ultimate aim of these principles is usually; ethical, transparent and accountable use of AI in a manner which is consistent with user expectations, societal laws and organizational values[35].

Another principle which can be explored is Principle of *Fair Competition*; Organizations that develop or use AI should design AI systems in a manner which ensures consistency with overarching ethos of subsisting competition regimes to promote free and vibrant competition. The AI systems shall be developed in a "compliance by design" manner[36].

4.4 Encourage Research into Responsible AI

The Government of India embarks on the path to facilitate research into Responsible AI. It intends to finance start-ups and research projects pertaining to Responsible AI tools such as explainable AI models, privacy preserving techniques, etc. Ministry of Electronics and Information Technology and National Association of Software and Services Companies (NASSCOM) has even launched a one stop digital platform for sharing of resources such as research papers, case studies in the field of AI[37]. The government intends to host an International conference on 'Responsible AI'.

To mitigate the burden of heavy investments with respect to AI, private entities could be encouraged to partake in providing investment to start-ups and universities for AI research by providing tax benefits to their other endeavours.

4.5 Self–assessment guide for Responsible AI

A Self–assessment guide for Responsible AI would allow AI developer or operator to evaluate the ethics level of an AI system. A step-by-step guide is provided in the draft. It would allow development and usage of AI to take place within the aforementioned principles.

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[35] Dominic Delmolina and Mimi Whitehouse, 'RESPONSIBLE AI: A Framework for Building Trust in Your AI Solutions' <https://www.accenture.com/_acnmedia/PDF-92/Accenture-AFS-Responsible-AI.pdf> accessed on 9 August 2020

[36] "Responsible AI Policy Framework' (ITECHLAW, 2018) <https://www.itechlaw.org/sites/default/files/ResponsibleAI_PolicyFramework.pdf> accessed on 9 August 2020

[37] (AI) <www.ai.gov.in> accessed 9 August 2020

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4.6 Ethical Committees

Often, organisations face a difficult task when it comes to ethical data collection, usage and sharing[38]. A strategy to advance responsible AI is instituting Ethical Committees. Ethical Committees are accountable for enforcement of the principles pertaining to Responsible AI. Certain duties of the Committee are assessing the "potential of harm" and potential benefits, evaluate plans and formulate a recommendation indicting if the AI solution shall be approved, it should ensure easily accessible and affordable grievance redressal system for AI's decisions, etc.

The composition of the Committee is also provided in the draft. The composition table has failed to mention the background of the Chairperson. It would be unwise to have a Chairperson without requisite qualification, expertise and experience to be able to oversee the operations of the Committee.

5 Conclusions

AI represents a new way of working. With the advancement of AI, multitude of changes within the organisation and the society will come about. While the advancement of AI has many benefits such as efficiency in workplace, cheaper costs, etc., it also raises concerns due to its potentially disruptive impact. The Draft for Discussion for Responsible AI by NITI Aayog pertains to address just this disruptive impact of AI. With the formulation of principles and EC, it is expected that the AI's negative aspects can be tamed. The concise Draft Paper throws a light on the pro-active stance of the government to exploit the potential of AI. The world is bracing for a massive AI influx and India is gearing up to take the full advantage of the scenario.

6 Recommendations

1. IBM has been developing methodologies which would help in reducing machine bias even when these training datasets are not available, where the a three level rating system is used for ascertaining the level of relative fairness by rating the same on the parameters of presence of bias, inheritance of bias and capability to introduce bias regardless of the data.
2. In order to solve a problem, the problem must first be understood. The legality with regard to AI and the black box problem cannot be solved entirely by technological solutions. Therefore, the first step should to be for policy makers to understand the various aspects of cross-disciplinary uses of opaque systems. One such example is the course of 'The Ethics & Governance of Artificial Intelligence' wherein it

[38] Ronald Sandler and John Basl, 'Building data and AI ethics committees' (Accenture, 2019) <https://www.accenture.com/_acnmedia/PDF-107/Accenture-AI-And-Data-Ethics-Committee-Report-11.pdf> accessed 9 August 2020

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focuses on analyzing the nuances of algorithmic decision making, autonomous systems and seeks to find a balance between regulation and innovation.

3. Another solution would be working towards a system wherein the technology is tweaked in a manner so as to produce largely explainable results. This draws from the Explainable AI program being run by the Defense Advanced Projects Agency, wherein it seeks to create prediction accuracy while explaining the rationale behind the decisions and simultaneously aiming to develop human interface into the process.
4. In terms of transparency and its achievability, a source to draw from is the General Data Protection Regulation (GDPR). Section 13 of the GDPR provides for a system of consent along with a system of checks and balances by also maintaining accountability upon the controller. Further a combination of Section 14 and 13 provides plausible solution for the problem of reliability in terms of deployment due to the black box problem.
5. These system considerations can be overcome through the development of Artificial Intelligence working on multimodal explanations. Under this system, textual rationale generation and attention visualization are used to build upon explanatory strengths. The artificial intelligence does not merely answer the question asked or solve the problem posed but also provides evidence of it through visual pointing. This combined with a system where more than one AI system is used of arriving at a conclusion further reduces the scope for ambiguity and provides a platform, which may allow policy makers to map the point where the discrepancy between the two systems arose.
6. The policy needs to take into consideration that if the black box problem cannot be completely eliminated, then pre-existing rules may be customized for the same. One such possibility is that of the principle of Vicarious Liability. This principle cannot have a blanket uniform application wherever credibility has been compromised. However, the same can be applied with a pro rata approach. In terms of circumstances where the AI was designed to achieve a specific task or the probability of externalizing failure on others is higher, would attract a stricter application of the liability principle. For situations where the probability is lower, the test of foreseeability could help determine as to whether the consequence, which occurred, was apparent or reasonably foreseeable.
7. Considering that there exist laws and the problems remain similar, their nature has seen a shift with regard to AI. For example, the privacy issues, which existed earlier, are different from the privacy issues of AI, therefore, the law will face difficulty in case pre-existing rules without customization are applied. Therefore, the regulations should be developed with an 'adaptive & anticipatory' approach.
8. The Indian government should be proactive to collect data relating to the employment scenario to better prepare for AI. Estimates of employment variables could be prepared through household surveys, surveys of business/enterprises, administrative sources and data from government schemes. The Government could also conduct periodic economy-wide skill gap analysis to prepare the labour market for future, dominated by AI, bots, etc. This would allow for data driven policies by tracking new developments in job scenario of the country.

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9. With over 50% of the India population under 25, an appropriate step would be to expose the young workforce to AI interfaces and machine learning. Online training shall be encouraged and education curriculum shall be evolved to prepare the students for the impact of AI. The current education system seems to be providing an output of low-employable students. Revamp of the curriculum, teach training and improvements in infrastructure are necessary in these times, the new national education policy (NEP 2020) is a step in the right direction. The government should set-up career counseling centers to enlighten the unaware youth about the changing dynamics and new possibilities in the job scenario.
10. The massive consumer market of India can be leveraged to access latest technology through assertion of technology transfer during FDI deals. Global firms should be encouraged to transfer advanced technology, create joint ventures and assist Indian firms, which would allow Indian firms to compete in areas of artificial intelligence, robotics, etc.
11. The government could boost employment in the areas, which are less vulnerable to automation. Education and Healthcare are such sectors, which involve high human engagement, which cannot be automated easily. Jobs in sectors like arts and entertainment are interpersonal and creative, and not under immediate threat of automation. Labour intensive industries such as tourism could be pushed with some aggression as India ranked 34th in the Travel and Tourism Competitiveness Report 2019, with much improve more improvement to grow. These sectors could be boosted to increase the said sectors' capacity to create jobs.
12. Providing a boost to the start-ups can be very beneficial in these changing job scenario as small enterprises, instead of big factories, seem to be an area, which can be exploited for proving more jobs in the future. India has a large unorganized and informal sector, start-ups can provide business models to address with the inefficiencies in various sectors and end up generating vast job opportunities. Higher procurement of goods and services from domestic start-ups by the Government could boost entrepreneurship. Moreover, entrepreneurship courses provided by universities could also lift the start-up culture in India. The Government's Start-up scheme is a step in the right direction and its implementation shall be aggressive to reach even the least advantaged groups.
13. Centers for excellence (CoEs) could be established that will use technology tools to develop standards and provide counselling for the youth for emerging jobs of future. Such centers should be established in every government university.
14. Adequate legal response would be to pass adequate data protection law. The Srikrishna Committee provided a framework to begin the dialogue on algorithmic bias. Individuals can be provided with the right to the logic of automated decisions. Such a right will potentially balance organizational interests with the need for algorithmic transparency.
15. Data collection of applications like Aarogya Setu should be completely transparent and limited for its use, to avoid situation like Cambridge Analytica scandal. It was stated in the MIT Technology Review that Aarogya Setu poses significant risks to the privacy of the user compared to similar apps in other countries and days later

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Union announced it would make the source code for the application public. This was a step in the right direction by the Government.

16. Non-state actors like NGOs should be included in the list of stakeholders. NGOs strive to protect and create awareness about the rights of the distressed in a society. Hence, they serve a noble purpose and are an integral part of the society. Many NGO's in India have been use AI to harness large amounts of data such as Akshaya Patra, which strives to eliminate classroom hunger by organizing mid-day meals, is using data analytics to serve children and utilize their funds more effectively. NGOs can also assist those members of the society who are affected by AI but do not have resources to voice their concerns. They are deploying AI to solve logistic problems such as figuring out the optimum route to deliver food. NGOs also spread awareness on issues related to AI. The Public Voice have even come up with guidelines to enhance the use of AI, as part of their awareness scheme. At the same time, there must be strong background checks to ensure that the participation of NGOs and Public Trusts is not tantamount to the national security imperatives in manner whatsoever.
17. The consultation process could have included academics, scholars and reformers, who with their expertise in the field of AI can provide specialist insight on the issue of Responsible AI and guide the formation of principles with respect to it.
18. Principle of Fair Competition: Organisations that develop or use AI should design AI systems in a manner which ensures consistency with overarching ethos of subsisting competition regimes to promote free and vibrant competition. The AI systems shall be developed in a "compliance by design" manner.
19. To mitigate the burden of heavy investments with respect to AI, private entities could be encouraged to partake in providing investment to start-ups and universities for AI research by providing tax benefits to their other endeavors.
20. Chairperson shall have requisite qualification, expertise and experience to be able to oversee the operations of the Committee.

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