A Critical View of Laws and Regulations of Artificial Intelligence in India and China

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Abstract

This research paper deals with the general understanding of AI technology and its laws and regulations in India and China. It examines this issue from developing countries perspective and focusing on India and China, as they represent around 40 % of the global population and are in the top 3 economies in the 21st century. Their experiences and approach may be useful for other developing and least developing counties due to similarities in socio-economic conditions e.g. food, poverty, employment and education etc. It is relevant to mention that India and China share many common grounds (high population and GDP growth etc.), but there are few important factors like democracy, demographic situation, the difference in economic power etc., make it an interesting case for other developing counties to choose their path. AI is considered the most revolutionary technology after electricity and designing a robust legal and regulatory mechanism is a challenging task at national and international level. This paper argues that such regulations should be guided by technological and socio-economic requirements of a country. Developing and developed world have different opportunities and challenges from AI, however, a general AI may create challenges before the existence of human civilization and raises many moral, ethical and legal questions; therefore, it is suggested to develop a well thought and holistic regulatory mechanism (laws and institutions) at national and international level.

Artificial Intelligence: Winter to Spring

"Nothing is more powerful than an idea whose time has come."

-Victor Hugo

The evolution and existence of human civilization are mainly based on its virtue of adaptability with new challenges and opportunities with inventions of path-breaking technologies.[1] It had started with the invention of fire and now in post-2000 AD era, countries around the globe are examining the potential socio-economic, legal and technical challenges and opportunities out of applying a new revolutionary technology; Artificial Intelligence (AI). However, the present spring period of AI has seen a hard

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1   Nils J. Nilsson, *The Quest for Artificial Intelligence: A History of Ideas and Achievements*, Cambridge University Press, UK, 2010.

time of AI winter era in the 1970s and 1980s. This is not a new idea for the scientific community and much of its technological and theoretical concepts were developed during the 1950s to 1970s. The term AI was given by John McCarthy[2] in 1956 and few other scientists like Alan Turing, Vannervar Bush and Marvin Minsky also examined this concept under computer science stream. During this period, the main focus was on how to develop and use AI to build high-quality machines to improve the quality of human lives. However, no significant technology came out for the industry and the common man and slowly the public and private funding stopped in this area by the end of the 1980s. The scientist community calls it 'AI winter" era.[3]

But as Victor Hugo's wisdom about the time and power of an IDEA, the "AI spring" period started about the 1990s and especially post 2000s. The advancement in computing power, low cost of storing data and high quality of digital data, pushed the idea of AI into reality and generated a new excitement in the public and private sector.[4]

This excitement is having apprehensions as well as hope for human civilization. Most of the studies are indicating hope and helping hand from AI to make human lives better and safe[5], however, some serious warnings have been raised by few top intellectuals and scientists[6]. This is a normal reaction to an up-coming path-breaking technology, however, it is a matter of debate and serious consideration that whether the AI is one of them or something completely new challenge before human civilization.

Current status of AI:

The level of intelligence decides the space of spice in nature. We, humans, were afraid of big animals like a lion or elephant until we had not discovered fire and other weapons to fight against them. We continued our journey through improving our intelligence and

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[2]   John McCarthy, Father of AI, a cognitive scientist coined the term AI in the 1956 Dartmouth Conference, the first artificial intelligence conference.

[3]   Brian McGuire et al, 'The History of Artificial Intelligence', *Course Web Service for the University of Washington - Computer Science & Engineering - History of Computing Projects,* 17-21 December 2006 available at https://courses.cs.washington.edu/courses/csep590/06au/projects/history-ai.pdf accessed on 1 October 2018.

[4]   The worldwide public cloud services market is projected to grow 21.4% in 2018 to total USD186.4 billion, up from USD153.5 billion in 2017. The cost for storing data has come down from USD500, 000 a gigabyte in 1980 to 2 cents a gigabyte in 2017. By 2025, the global data sphere will grow to 163 zettabytes (trillion gigabytes) or ten times the 16.1ZB of data generated in 2016. David Reinsel et al, 'The Evolution of Data to Life-Critical whitepaper by International Data Corporation, 2017', *Data Age 202,* November 2018 available at *https://www.seagate.com/files/www-content/our-story/trends/files/Seagate-WP-DataAge2025-March-2017.pdf* accessed 1 October 2018.

[5]   AI can be great supporting technology to solve challenges in education, health, environment, economic growth, Social/elder care etc; 'Artificial intelligence: the next digital frontier?', *The Mckinsey Global Institute (MGI) (*June 2017) available at www.mckinsey.com/mgi/overview/2017-in-review/whats-next-in-digital-and-ai/artificial-intelligence-the-next-digital-frontier accessed 1 October 2018.

[6]   Elon Musk, 'With artificial intelligence, we are summoning the demon', *MIT Aeronautics and Astronautics Department's 2014 Centennial Symposium,* 24 October 2014 available at https://techcrunch.com/2014/10/26/elon-musk-compares-building-artificial-intelligence-to-summoning-the-demon/ accessed on 1 October 2018; Stephen Hawking, 'AI could be 'worst event in the history of our civilization', *Web Summit technology conference*, Lisbon, Portugal, 17 November 2017 available at https://www.cnbc.com/2017/11/06/stephen-hawking-ai-could-be-worst-event-in-civilization.html accessed on 1 October 2018.

since the last 10,000 years, we are ruling the plantlet earth. Despite having a relatively very weak physical structure, we were able to achieve this superiority due to our efforts to upgrade our intelligence. [7] The AI is the next level of our effort where we want to create a system whereas machines and software can not only find problems but provide a solution without human interventions. So, we can say, AI is software, supported by the hardware, large-quality data, high power computing/internet to think, sense and decide to good for humans. [8]

Recent McKinsey Global Institute (MGI) report[9] finds that AI-supported machines and solutions have wide applicability in almost all sectors. However, this applicability can be understood in four dimensions:

1. Perception: This is the first level of AI, where this technology is used to collect and interpret the data to understand the situation and describe it more efficiently. The natural language processing, computer vision and audio processing technologies are working on this dimension.[10]

2. Prediction: This is the area where AI is helping companies to predict the behaviour of their consumers to develop precisely targeted adversities/services for them. This prediction part is based on perception or patterns.[11]

3. Prescription: The next of AI is to help us to achieve a particular goal like drug discovery, route planning, dynamic pricing etc.[12]

4. Integrated Solutions: The most updated complex use of AI is to its capability to work with other technologies like robotics and block chain to create integrated solutions like autonomous driving, personal robots, medical robots etc.[13]

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[7] 'Sapiens: A Brief History of Humankind, 2015 &The Future of Humanity - with Yuval Noah Harari', *Youtube* available at https://www.youtube.com/watch?v=XOmQqBX6Dn4 accessed on 29 July 2019.

[8] Marcus Hutter & Shane Legg, 'Universal Intelligence: A Definition of Machine Intelligence', *Minds and Machines*, 2007, pp. 405-423; Pei Wang, 'What Do You Mean by "AI"?', Frontiers in Artificial Intelligence and Applications, 2008, pp. 371-372.

[9] 'The age of analytics: Competing in a data-driven world', December 2016, *McKinsey Global Institute* available at https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/the-age-of-analytics-competing-in-a-data-driven-world accessed on 1 October 2018.

[10] Apple's Siri, Microsoft's Cortana, Google's Assistant, and Amazon's Alexa are good examples of personal assistants. See, www.apple.com/siri/; https://www.microsoft.com/en-in/windows/cortana; https://assistant.google.com/#?modal_active=none; https://developer.amazon.com/alexa accessed 1 October 2018.

[11] Netflix uses algorithms which suggest its content to consumer based on their previous viewing history and behavior. Danny Vena, ' Netflix Is Using AI to Conquer the World... and Bandwidth Issues', *The Motley Fool,* 21 March 2017 available at https://www.fool.com/investing/2017/03/21/netflix-is-using-ai-to-conquer-the-worldand-bandwi.aspx accessed on 1 October 2018.

[12] Wealth front, an AI-supported online platform provides automated suggestions to its consumers to maximize asset allocation & wealth management. Ryan W. Neal, ' Wealth front Turns to Artificial Intelligence to Improve Robo Advice', Wealthmanagement.com, 31 March 2016 available at https://www.wealthmanagement.com/technology/wealthfront-turns-artificial-intelligence-improve-robo-advice accessed on 1 October 2018.

[13] Baidu's autonomous car functions in a controlled environment; Andrew K Hawkins, ' Baidu gets the green light to test self-driving cars in China', *The Verge,* 23 March 2018 available at https://www.theverge.

This categorization is based on the difference between Narrow (weak) and General (strong)AI[14]. The first one is based on simulated thinking, which looks intelligent but does not have any independent consciousness about its actions and outcomes and normally limited to one of the few given tasks. Google Map or Chabot are good examples of this. General AI describes the "real independent thinking/intelligence/consciousness". Here, the AI works like the human mind and perform actions with its decision process to achieve a goal. After having a general discussion on AI technology, the next section examines the Indian and Chinese strategies on AI.

Chinese and India: AI strategies

The increasing awareness of the potential socio-economic challenges and opportunities of AI at a national and international level is resulting in the introduction of national policies and institutions to promote and regulate AI in the respective jurisdiction. The major economies like China, USA, Canada, UK, France, Japan and India have released their short and long-term strategies and goals for AI.[15] In some counties like UAE and UK, separate ministry and office have been also introduced to implement their national goals.[16] Against these global developments background, this section deals with India and the Chinese AI strategy.

China: A global leader in progress

In July 2017, the Chinese State Council issued a detailed and ambitious strategy/policy, "New Generation AI Development Plan"[17]to achieve its President Xi Jinping dream to become a world leader in "science and technology".[18] This plan has specific benchmark milestones to achieve by 2030 to make China as a world leader in AI. It has outlined three stages to achieve specific finance milestones. By 2020, the Chinese AI industry will be at par with the most advanced countries with $ 22 billion in core AI industry and $150 billion in AI-related industries. By 2025, it will become a "world-leading" competency in some AI areas and the respective number will move to $ 60 billion and $ 754 billion. And finally, by 2030, it aims to become the "World's Primary AI Innovation centre" with $ 150 billion and $1.5 trillion in AI and related industries.

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com/2018/3/23/17156098/baidu-self-driving-car-test-permit-china accessed on 29 July 2019.

14   Ben Dickson, 'What is Narrow, General and Super Artificial Intelligence', *Demystifying AI*, 12 May 2017, available at https://bdtechtalks.com/2017/05/12/what-is-narrow-general-and-super-artificial-intelligence/ accessed on 1 October 2018.

15   Tim Dutton, 'An Overview of National AI Strategies', June 2018 available at https://medium.com/politics-ai/an-overview-of-national-ai-strategies-2a70ec6edfdJune accessed on 1 October 2018.

16   Dom Galeon, 'An Inside Look at the First Nation With a State Minister for Artificial Intelligence', *Futurism,* 11 December 2017, https://futurism.com/uae-minister-artificial-intelligence, accessed 1 October 2018.

17   China Copyright and Media, 'A next generation Artificial Intelligence Development Plan', 20 July 2017 available at https://chinacopyrightandmedia.wordpress.com/2017/07/20/a-next-generation-artificial-intelligence-development-plan/ accessed on 19 July 2019.

18   Jeffrey Ding, 'Deciphering China's AI Dream: The context, components, capabilities, and consequences of China's strategy to lead the world in AI', *University of Oxford*, March 2018 available at https://www.fhi.ox.ac.uk/wp-content/uploads/Deciphering_Chinas_AI-Dream.pdf accessed on 1 October 2018.

These targets are in sync with PwC report[19] that by 2030, AI will contribute 26% ($ 7.1 trillion) boost to of Chinese economy. By adopting emerging technologies[20] at rapid speed, China is also taking military leadership at the global level.[21] Considering the current economic size and future projected growth of China, it is arguably right to predict that China will have a leading capacity in AI due to their strong public-private efforts, supported by a strong federal government system.

India: Potential baby in AI development

The Indian Government issued its first AI policy in June 2018,[22] focusing on applying AI technology in core five social sectors, Health, Agriculture, Education, Smart cities/infrastructure and smart mobility/transport. This paper discusses three aspects of AI in India'; Economic impact[23], social development and inclusive growth and India's Ai experience for rest 40% developing and least developing counties (ex-China).

The unique feature of Indian AI policy is to aiming a global solution of social and economic problems through the implementation of AI in core social sectors in India. The idea is, if AI Solve for India, it can solve for the remaining 40% population in developing and least developing countries. This policy does talk about specific economic numbers like Chinese policy; however, it indicates few challenges in development and adoption of AI technology in India, including, low intensity of public and private AI research, weak intellectual property system, unclear privacy, security and ethical regulations and lack of data and core technology.

This policy paper also discusses creating a regulatory framework towards a "Responsible AI" by dealing with ethics, fairness / tackling the biases, Transparency/opening the "Black Box", privacy and security issues related with AI.

India's AI policy is at a very early stage and the current policy paper recommends establishing public and private AI research centres, increasing public funding for core AI research, Re-skilling of the current workforce, creating a multi-stakeholder

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[19] 'PwC's Global Artificial Intelligence Study: Exploiting the AI Revolution', *PwC,* September 2018 available at https://www.pwc.com/gx/en/issues/analytics/assets/pwc-ai-analysis-sizing-the-prize-report.pdf accessed on 1 October 2018.

[20] Offensive cyber capabilities, anti-satellite weapons, electronic warfare tools, hypersonic weapons, artificial intelligence, and quantum technologies etc.

[21] Subcommittee on Emerging Threats and Capabilities *Chinese Advances in Emerging Technologies and their Implications for U.S. National Security*, 9 January 2018 available at https://csis-prod.s3.amazonaws.com/s3fs-public/congressional_testimony/ts180109_Carter_Testimony.pdf?zmxasiIZi6jHZPgAAsMYcSiSMwdw6LgJ accessed on 1 October 2018.

[22] Discussion Paper National Strategy for Artificial Intelligence, *Niti Aayog,* June 2018 http://niti.gov.in/writereaddata/files/document_publication/NationalStrategy-for-AI-Discussion-Paper.pdf accessed on 1 October 2018.

[23] Rewrite for Growth, 'AI may boost India's annual growth rate by 1.3 percentage points by 2035. Rewire for Growth: Accelerating India's Economic Growth with Artificial Intelligence', *Accenture*, 20 December 2017 available at https://www.accenture.com/t20171220T030619Z__w__/in-en/_acnmedia/PDF-68/Accenture-ReWire-For-Growth-POV-19-12-Final.pdf%20-%20 zoom=50 accessed on 1 October 2018.

marketplace for efficient adoption of AI technology, facilitating creation of large foundational annotated datasets for machine learning, promoting Industry-Academic –Research collaborations etc.

Law & Regulation of AI: Fundamental understanding

"We live in reference to past experience and not to future events, however inevitable."

-H. G. Wells[24]

Throughout history, humans have shaped, developed and adapted to new path-breaking technologies.[25] The measure of success for any existing and emerging technologies is the value they create for the quality and security of human lives. To achieve this goal, policymakers should design a legal and regulatory framework to enable people to understand these technologies properly, participate in their utilization and build trust between humans and machines.[26] The legal and regulatory approach should also help the society's adaption to these technologies, considering that new types of opportunities and challenges are presented before human civilization.[27]

The debate about regulation or creating or amending laws to deal with new technologies is not new for humans.[28] We had done it successfully for the last 3 industrial revolutions; however, this 4.0 industrial revolution[29] seems a different challenge from classical legal and regulatory approaches. The absence of human intelligence in creation was never a case before and by creating a parallel or even powerful partner; AI needs a different approach.[30] Designing a robust legal and regulatory mechanism is a challenging task as described by Judge Easterbrook in his famous paper titled "Cyberspace and the law of Horse"[31]. He argues that building an ex novo law for new technologies invites error in legislation when the subject matter of law is emerging at a rapid and uncertain way. The second challenge comes from the Harvard law school approach that "overly rigid

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24   H. G. Wells, *Mind at the End of Its Tether, quoted in E. Ehrlich and M. de Bruhl, The International Thesaurus of Quotations*, 2nd ed., Collins, New York, 1996, p.493.

25   *Yuval Noah Harari, 21 Lessons for the 21st century*, Random House, UK, 2018.

26   Ryan Calo, 'Robotics and the Lessons of Cyberlaw', *California Law Review*, 2015, pp. 517-525.

27   'The future of regulation: Principles for regulating emerging technologies', *Deloitte Insights*, June 2018 available at https://www2.deloitte.com/insights/us/en/industry/public-sector/future-of-regulation/regulating-emerging-technology.html accessed on 1 October 2018.

28   Gary E. Marchant, Douglas J. Sylvester, & Kenneth W. Abbott, 'What Does the History of Technology Regulation Teach Us about Nano Oversight?', *Journal of Law, medicine and Ethics*, 2009.

29   Cristina Klingenberg, *'Industry 4.0: what makes it a revolution?'* Research paper presented at EurOMA 2017, Heriot-Watt University, Scotland, July 2017available athttps://www.researchgate.net/publication/319127784_Industry_40_what_makes_it_a_revolution accessed on 1 October 2018.

30   Nicolas Petit, "Law and Regulation of Artificial Intelligence and Robots: Conceptual Framework and Normative Implications.", *Semantic Scholar,* 2017 available at https://www.semanticscholar.org/paper/Law-and-Regulation-of-Artificial-Intelligence-and-%3A-Petit/3f70353ce297322a8029b95d8c734a7a6a95f749 accessed 1 October 2018.

31   Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, University of Chicago Legal Forum, 1996.

regulations to emerging path-breaking technologies might stifle innovation process".[32]

However these approaches are not suitable to apply AI, as this is not a stand-alone technology only, but the complex nature and implications of this special approach as the future of human civilization depend on effective regulation and legal mechanism.[33] The moral and ethical issues have swiftly called for an all-out ban on a few AI products and services like lethal automated weapons (LAWs) and sex robots.[34] These complete restrictions are difficult to put on AI research as most of the research is out of the state's domain, geographically fragmented but highly integrated through technology, having multiple dimensions in terms of uses, quite secretive in nature and finally in the absence of any global law or institutions, hard to examine and monitor the negative side of it.[35]

The third and more appropriate legal and regulatory approach is to examine this issue from public policy (democracy, security, privacy etc) and specific field of law (intellectual property, competition law, liability laws etc). However, a robust approach cannot be developed only by applying legalistic view by ignoring technological, socio-economic and political conditions of a country or community. In addition to choosing a balanced technical approach, the question of having a national or regional or international laws/regulations and institutions is also equally important. The present global political and economic order is moving back to the pre-1950s era, where individual states had different views and solutions to global problems.[36] The globalization of law and regulation of AI is very important as technologies and corporations involved don't accept national boundaries. At the same time, the purpose and effects of AI also differ from developing world to developed economies.[37] Therefore, these factors are equally crucial at a national and international level in designing laws and regulation for AI.

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[32] Kate Crawford, 'Artificial Intelligence's White Guy Problem', *The New York Times*, 25 June 2016 available at https://www.nytimes.com/2016/06/26/opinion/sunday/artificial-intelligences-white-guy-problem.html accessed on 1 October 2018.

[33] Weng, Yueh-Hsuan et al. 'Toward the Human-Robot Co-Existence Society: On Safety Intelligence for Next Generation Robots', *I. J. Social Robotics*, 2009, pp. 267-282.

[34] United Nations Office for Disarmament Affairs, 'Pathways to Banning Fully Autonomous Weapons', October 2017 available at https://www.un.org/disarmament/update/pathways-to-banning-fully-autonomous-weapons/ accessed on 1 October 2018; 'sex robot brothel' blocked by Houston government: We are not Sin City' 4 October 2018 available at https://www.cnbc.com/2018/10/04/houston-blocks-sex-robot-brothel-from-opening.html accessed on 6 October 2018.

[35] Matthew U. Scherer, 'Regulating artificial intelligence systems: risks, challenges, competencies, and strategies', Vol. 29, *Harvard Journal of Law & Technology,* 2016.

[36] The Beginning of the End for Globalization', *Handelsblatt Global*, 6 January 2017, available at https://global.handelsblatt.com/politics/the-beginning-of-the-end-for-globalization-673243 accessed on 1 October 2018.

[37] UN, 'Artificial Intelligence in Asia and the Pacific', The Economic and Social Commission for Asia and the Pacific (ESCAP), 2018 available at https://www.unescap.org/sites/default/files/ESCAP_Artificial_Intelligence.pdf accessed on 1 October 2018.

Law &Regulation of AI: China & India

Economic and legal regulations in developing countries like China and India have a prime social welfare objective of poverty reduction, employment, health, education and other social objectives, in additions to facilitating economic growth. Therefore, the introduction of regulation of AI should originate from these factors other than only economic efficiency. Considering the need for a balanced regulatory framework of AI, a complex trade-off issue must be faced by both countries. A detailed policy discussion is required at the top level to choose between a Disabling Regulation,[38] Knee-Jerk Regulation,[39] and Rent-Seeking Regulation[40] or Rule/Institution-based Regulation.[41]

This paper deals with designing of laws and regulation for AI in India and China as both countries are not only economic leaders at the global level but developing and least developing counties can learn from these counties due to similarities in economics and social conditions. It is relevant to mention that India and China share many common grounds (high population and GDP growth), but there are few important factors like democracy, demographic situation, the difference in economic power etc, make it an interesting case for other developing counties to choose their own path.

China

The 2017 State Council's plan[42] stated that by 2025, China will have the first generation of AI laws and regulation, and by 2030, more comprehensive second-generation AI laws and regulations will take place. No further specific information and timelines were provided, which shows the smoky nature of Chinese discussion on national AI policy. China is aiming to achieve its technological and economic AI targets through a joint action plan of the National Development and Reform Commission, the Ministry of Industry and Information Technology and the Ministry of Finance and designing a legal and regulation framework is not in immediate agenda now. This reactive legal and regulatory plan may end up with "Colling ridge Paradox"[43]and create many social and economic problems.

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[38] It can stop or slow down the technological process in the trial phase, e.g., Restriction on commercial use of drones or transparency requirement for bitcoin payments at block chain platforms.

[39] An over-regulation framework produces efficiency in response to risks, incidents and accidents. Also known as *"risk regulation reflex", e.g.,* the prohibition of fully AI –operated planes.

[40] Some private interests groups have incentives and abilities to control/guide the regulatory policies towards their benefits. Car manufactures/dealers and insurance sector demand strict liability and enforcement against Tesla's driverless AI-supported car.

[41] Functioning of an expert Regulator or Governments' department, e.g., The European Data Protection Board is consistent application of data protection rules throughout the European Union, and promotes cooperation between the EU's data protection authorities. European Data Protection Board, 'About EDPB' available at https://edpb.europa.eu/about-edpb/about-edpb_en accessed on 5 October 2018.

[42] State council notice on the New Generation Artificial Intelligence Development plan 2017; Jeffrey Ding (n 18).

[43] D. Collingridge, *The Social Control of Technology*, London: Francis Printer Ltd., 1980. It is argued that the suitability or challenges/opportunities of a destructive technology cannot be fully understood until it further develops. Therefore, the regulation process should keep a connection, acquire more knowledge and wait for real application/implications of such technology. However, in this process, the technology advances further and too late to intervene.

India

India's first national policy, 2018 on AI[44] focus on developing expert research institutions and a task force to achieve its goals. It recommended a Taskforce, comprising of Ministry of Corporate Affairs, Department of Industrial Policy and Promotion, to examine and recommend to intellectual property laws relating to AI. It also recommended that a standing committee or task force to examine and report on changes in employment due to the adoption of AI. Following this recommendation, the Ministry of Commerce and Industry has set up a Taskforce[45], headed by a Computer Science Professor from Indian Institute of Technology Madras, to integrate AI in India's Economic, Political and Legal thought processes for developing systemic capability to support the goal of India becoming one of the leaders of AI-rich economies. In addition to these Taskforces, the sectoral regulators[46] are engaging with AI-related business practices and their impact on the respective sector.

The examination of both countries AI policies reflect mainly economic benefits coming out from AI and, very less discussion and details are given on a robust legal and regulatory regime. Both countries intend to rely on their existing administrative, regulatory and judicial system to deal with challenges of AI in the future. However, it is argued that in the absence of an expert, independent Regulator with ex-ante approach, it would be challenging to have a holistic approach to understand the socio-economic impact of AI on employment, privacy, Laws (IP, Competition, Tort, Family etc) and political institutions etc, which may create further challenges to inequality and law and order problems in fast-growing economies.

Conclusion

Despite the high economic growth, India and China are still facing challenges relating to engagement of unskilled labour in agriculture and small size industries, quality of technical education and high rate of unemployment youth. The existing estimates of the population engaged in employment facing threat from automatability (AI & robotics), is 77% in China and 69% in India.[47] Being a democratic and data-intensive country, India may face challenges in data privacy/usage by AI technologies as a threat

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[44]   Amber Sinha, Elonnai Hickok & Arindrajit Basu, 'AI in India: A Policy Agenda', *The Centre for Internet & Society,* 5 September 2018 available at https://cis-india.org/internet-governance/blog/ai-in-india-a-policy-agenda accessed on 5 October 2018.

[45]   Government of India, 'Taskforce on Artificial Intelligence', *Ministry of Commerce and Industry* available at https://www.aitf.org.in/ accessed on 5 October 2018.

[46]   The Director-General of Civil Aviation released its regulation policy for commercial use of AI-supported drones in Aug 2018. Ministry of Civil Aviation, 'Government announces Regulations for Drones', PIB Delhi, 27 August 2018 available at https://pib.nic.in/PressReleaseIframePage.aspx?PRID=1544087 accessed on 5 October 2018. The Indian Antitrust Regulator decides to assess AI algorithms used by domestic airlines for ticket pricing; PTI, 'CCI lens on algorithms used for air ticket prices', 11 May 2018 available at http://timesofindia.indiatimes.com/articleshow/64122441.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst accessed on 5 October 2018.

[47]   World Bank Report (2016), *World Development Report: Digital dividends,* World Bank Group, 2016 available at http://documents.worldbank.org/curated/en/896971468194972881/pdf/102725-PUB-Replacement-PUBLIC.pdf accessed on 5 October 2018.

to the democratic and ethical values of citizens and institutions. Both regimes have different objectives and stages in AI development race, but their cooperation may help to generate a voice of developing countries in AI technology development and usages at national and international level.

It is concluded that AI is a huge challenge as well as a great opportunity for more than 800 million marginalised people in both countries and they should cooperate and participate in ongoing global debates from developing countries perspective on these technologies to develop equity, justice and fairness-based society.

Currently, a robust legal and regulatory regime, focusing on AI is missing but the main focus of this ongoing process should be on employment creation, improving health, education and other social sectors. Instead of relying on fragmented regulatory agencies and *ad hoc* approach on existing and future laws, a federal AI regulator should be established to understand and apply AI technologies in the best use of their citizens.