Towards an unanimous international regulatory body for responsible use of Artificial Intelligence [UIRB-AI]

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Abstract

Artificial Intelligence (AI), is once again in the phase of drastic advancements. Unarguably, the technology itself can revolutionize the way we live our everyday life. But the exponential growth of technology poses a daunting task for policy researchers and law makers in making amendments to the existing norms. In addition, not everyone in the society is studying the potential socio-economic intricacies and cultural drifts that AI can bring about. It is prudence to reflect from our historical past to propel the development of technology in the right direction. To benefit the society of the present and future, I scientifically explore the societal impact of AI. While there are many public and private partnerships working on similar aspects, here I describe the necessity for an Unanimous International Regulatory Body for all applications of AI (UIRB-AI). I also discuss the benefits and drawbacks of such an organization. To combat any drawbacks in the formation of an UIRB-AI, both idealistic and pragmatic perspectives are discussed alternatively. The paper further advances the discussion by proposing novel policies on how such organization should be structured and how it can bring about a win-win situation for everyone in the society.

Introduction

We are in an exciting phase of humanity, where a rapid transition to an hybrid society is taking place in a blink of the eye, in terms of evolutionary time. The spectrum of benefits AI can potentially offer mankind are astounding. At the AI for Good Global summit 2017, co-organized by the UN agencies at Geneva, Artificial Intelligence was undeniably pronounced as the fourth Industrial revolution to take place. AI could add an estimated 654 billion British Pounds to the UK economy by 2035, while the annual economic growth rate of 12 major developed economies can potentially double. (Purdy and Daugherty 2017). On October 2016, the National Science and Technology Council (NSTC) of the United States released its first ever report on AI to the public. AI and the fourth Industrial Revolution

In his book The fourth Industrial Revolution, Klaus Schwab elaborates in detail the societal impact of technologies like AI, robotics, the internet of things, autonomous vehicles, 3D printing, the blockchain, biotechnology (Schwab and Forum 2016). He opinions that, the challenges we face with these technologies is to come up with new forms of social and employment contracts that suit the changing workforce and the evolving nature of work. According to a report by PwC at the World Economic Forum’s Annual Meeting of the New Champions 2017, the global GDP could be 14% higher in 2030 as a result of AI the equivalent of 15.7 trillion USD (Gerard Verweij and Woods 2017). The biggest gainers might be China 26% (boost to GDP in 2030) and North America (14.5% boost), equivalent to a total of 10.7 trillion USD and accounting for almost 70% of the global economic impact by AI alone. Healthcare, automotive, financial services, manufacturing, transportation and logistics are predicted as high impact sectors of AI. Owing to the mammoth economical impact AI can bring about, multinational companies, start-ups and national governments are funding AI research like never before. Figure 1, depicts the surplus investments made by various organizations world wide. Although the advent of multinational corporation has put the question of relationship between economies and policies in a new guise, it is an old issue (Mingst, SNYDER, and others 2004). It is worthwhile to note the insignificant role of UN in AI research and development. Albert Einstein explained in detail in his open letter on why technology doesn’t help progress humanity on whole:

'... The progress of technological development has not increased the stability and the welfare of humanity. Because of our inability to solve the problem of international organization, it has actually contributed to the dangers which threaten peace... The moral authority of the United Nations would be considered enhanced if the delegates were elected directly by the people...' (Einstein 1947) - pp. 13-14 Open Letter, To the General Assembly of the United Nations

In this paper, I explore the societal impact of AI and explain why drastic measures should be taken by the UN to take charge of world-wide AI research and development.
Ethical concerns with AI

Along with its immense benefits, AI also brings a broad spectrum of sophisticated and sensitive issues to the society. Interestingly, the issues in one domain of application greatly overlaps with issues in the other domains of application. Ideally, risk assessment, precautionary measures and sufficient regulations for every single concern has to be made well in advance. All such concerns could be grouped into two major categories. Namely, **Class 1** and **Class 2**. Both classes of issues must be regarded equally important.

**Class 1** issues are concerned with the current state of the art AI and its immediate consequences. **Class 1** includes, algorithmic bias in autonomous systems (Danks and London 2017a), regulation of autonomous systems (Bonnefon, Shariff, and Rahwan 2016; Danks and London 2017b), Lethal Autonomous Weapons (LAWS) (Lin, Bekey, and Abney 2008; Wallach and Allen 2013; Wallach 2017) and roboethics (Lin, Abney, and Bekey 2011).

**Class 2** issues are more concerned with long term implications of AI. For example, the future of employment (DeCanio 2016; Frey and Osborne 2017), the value alignment problem in machine ethics (Allen, Wallach, and Smit 2006; Deng 2015) and the transcendence (Hawking et al. 2014). In comparison to super intelligent machines, human beings might remain incapable of processing huge volumes of data and store information within their brains. Tech billionaire **Elon Musk** went further ahead in this front to launch his new start-up Neuralink to allow people communicate directly with machines without going through a physical interface. This would take humans closer to the *Epoch 6* of technological singularity (Kurzweil 2010). Any unethical efforts towards artificially enhancing human intelligence through Brain Computer Interface (BCI) or transgenic human embryos are clearly not encouraging. As knowledge of neuroscience grows, so should neuroethics grow (Greely, Ramos, and Grady 2016; Schaffner in press).

Research committees and initiatives to keep AI beneficial

Several committees are working together to keep AI beneficial. To name a few, the Group of Governmental Experts (GGE), Future of Life Institute, the Machine Intelligence Research Institute, Future of Humanity Institute, Partnership on AI, DeepMind Ethics and Society, AI for Good Global summit are few committees and conferences that focuses on enhancing the benefits of AI. IBM works in close association with the Europe Union towards better policy making for AI (Rossi 2016). At the Future of Life institute, 892 AI researchers and 1445 experts co-signed and published the 23 Asilomar AI Principles to prevent any deviation of AI study and application. The IEEE’s Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems (Chatila et al. 2017) has recently published the first version of a charter entitled ‘Ethically Aligned Design’ (IEEE 2016) in the creation of which more than 100 experts were involved. Meritorious initiatives like the AAAI/ACM’s AIES conference on AI, ethics and society will bring about more awareness amongst the present and future generations of researchers. Such reinforcements and support from acclaimed institutions will only foster safety research on AI.

A solution to the value alignment problem has long-term implications for the future of AI and its relationship to humanity (Bostrom 2014) and short-term utility for the design of usable AI systems. Researchers have already made efforts to tackle an agent’s misaligned values with humanity. The work includes, a game-theoretic model for cooperative inverse reinforcement learning (CIRL) for autonomous systems to be helpful to humans and to pose no unwarranted risks (Hadfield-Menell et al. 2016). To better understand human values, initial steps to model inference from human preference of bounded (Evans and Goodman 2015), ignorant and inconsistent agents (Evans, Stuhlmüller, and Goodman 2016) have been made.
Need for an unanimous international regulatory body for AI

Owing to the effects of globalization and the decentralized blockchain technology (Wright and De Filippi 2015), any advancements or catastrophes in one part of the world will directly or indirectly affect the other. Imagining a scenario where country X withholds the development of particular application of AI like that of the autonomous weapons, country Y might continue its development of autonomous weapons. Hence, to not lose its strategic position, country X is forced to advance its development of autonomous weapons. This scenario can be extended to any other application of AI across nations and MNCs. Hence an act in unison is required for optimizing peace and harmony throughout the world. The NSTC cautiously stated that, in the coming years, AI will continue to contribute to economic growth and will be a valuable tool for improving the world, as long as industry, civil society, and government work together to develop the positive aspects of the technology, manage its risks and challenges and ensure that everyone has the opportunity to help in building an AI-enhanced society and participate in its benefits (Executive office of the President, U.S. Government 2016). The United Nations co-organized the AI for good global summit in Geneva on June 2017 for the first time. While it is appreciable that the high-caliber organization organized such a summit on a neutral platform, it might already be too late. As we saw earlier, the initiatives and strategies being adopted by private organizations, national governments and public universities are far more convincing. Consider the recent meeting by the Group of Government Experts (GGE) in its first formal proceeding on LAWS, organized under the Convention on Certain Conventional Weapons (CCW) at the UN Office at Geneva. The meet remained inconclusive and in addition, apart from disarmament, the committee doesn’t addresses numerous other concerns of AI.

Worthwhile learnings from the history

From the Rama empire to the Roman empire to the British empire; it is noteworthy that, no single empire continued dominating it’s territories forever. It is unclear how much of regression to the mean phenomenon can be correlated with dynastic cycles. But drastic socio-economic changes and shifts in world powers were preceded by a combination of factors such as effective business administration, technological advancement or military aggression. Speaking about technological advancement, the incessant cycle continues to prevail. From the invention of bow and arrow to the Industrial revolution to the development of nuclear weapons; the political stability of the world was tested. A birds eye view would suggest, it was technology which consistently succeeded every time. Radically, with lessons from history, any specific communities’ attempt to overpower the rest makes no sense. Given the voluminous range of benefits, AI should eventually evolve as a technology for the whole of the humanity.

Artificial Intelligence and National Governance

The Government of Canada is funding 125 million dollar for AI research that will cement Canada’s position as a world leader in AI. The strategy is to attract and retain top academic talent in Canada. The program will be administered through CIFAR, the Canadian Institute for Advanced Research. In the US, all major federal departments and agencies are represented in the sub-committee on Machine Learning and Artificial Intelligence. They sought to work together to monitor the state of the art Machine Learning and AI within the federal government, across the private sectors and other nations (Executive office of the President, U.S. Government 2016). A strategic plan has been laid out for federally-funded research and development in AI (Networking and Information Technology 2016). UK already has a competitive advantage in Artificial Intelligence, with a rich ecosystem for investors, AI researchers, developers and clients. The government of UK has funded 17.3 million GBP from the Engineering and Physical Sciences Research Council (EPSRC) to support the development of new Robotics and Artificial Intelligence (RAI) technologies in universities across the UK. The State Council of the Peoples Republic of China made announcements on building an AI industry worth 150 billion by making China the global leader in the field by 2030.

With major global economies competing with each other for the first mover-advantage with AI, the development of AI might eventually result in greater imbalances. Especially with the under developed and developing nations being left behind. If not for a proper economic world order, ultimately, notorious misuse of AI might commence. Nationalism is evident from the current economic order. The UN peacekeeping budget (7.87 billion USD, 2017) is less than half of one percent of world military expenditures (estimated at 1,747 billion USD, 2013). Given the current global political situation, any strong rules and regulations formulated by the UN can be easily overthrown by any single nation.

AI and Nationalism: How much ever may the research scientists contribute in developing safe methods for a stable AI, how much ever may the statutory bodies work on formulating hard law or soft law for proper usage of AI, peaceful development of AI would demand the cooperation among-st the nations. Cooperation among-st nations is possible only when citizens of every nation quit the ideologies of nationalism. The citizens of all countries are divided by nationality, language, race, sex, etc., A divided world makes humanity incapable of ethically handling a massive technology like that of AI. Unity doesn’t means banishment of diversity, but celebrating diversity. Unity doesn’t mean a common religion or a common language but a common plan through understanding. In his book The world as I see it, Albert Einstein refers nationalism as a provincial mentality which is the cause of greatest concern facing humanity. Einstein believed in a global government.

‘...Nationalism is an infantile disease... Nationalism, on my opinion, is nothing more than an idealistic rationalization for militarism and aggression...’ (Einstein 1949)
Artificial Intelligence, MNCs and Law

For governance of emerging technologies, international harmonization and soft law approaches (OECD 2013) are the two widely followed approaches. Soft laws include private standards, guidelines, codes of conduct, and forums for transnational dialogue (Marchant and Allenby 2017). Given the intricacies in the international relationship between the national governments, alternatively, hard laws are possible only if all MNCs voluntarily support the UN in unison. But the realities are quite adversarial. While technology progresses drastically, the generally slow paced law and policy amendments lags far behind. Citing this linear trajectory in policy amendments, the exponentially developing tech companies are not in good terms with the UN agencies like the ITU. Also, the EU recently slapped heavy penalties over major tech companies on antitrust charges among-st others. Notably, no major national government agencies are involved in the acclaimed partnership on AI. Given the combined economic strength of MNCs, should economics govern politics? At present, informal standardizers govern artificial intelligence (Burr 2017). The International Court of Justice, the international criminal courts, and the regional human rights courts should step up their game in dealing with control and delegation of AI.

Genetically modified human embryos were not developed to maturity, not because it was impossible. But because it was forbidden by national laws. Similarly, law makers should not wait until the development of AI saturates. Regulations to prevent unethical consequences of AI must be made immediately. Even if a Safely interruptible agent (Orseau and Armstrong 2016) or an Agent Agnostic Human in the Loop Reinforcement Learning (Abel et al. 2017) is successfully developed, the decision on who holds the moral authority to interrupt and to what extent is highly debatable. Given the intensity of the technology, the requirement of an Unanimous International Regulatory Body for the responsible use of AI (UIRB-AI) is indispensable for ethical progress of the fourth Industrial Revolution.

Organizational structure of UIRB-AI

For the first time in history, the United Arab Emirates (UAE), recently pronounced the 27-year-old Omar Bin Sultan AI Olama as the minister in-charge of AI. It is clear that in the coming years, AI will play a significant role in governance. Under the United Nations, the UIRB-AI must assemble massively strong and parallel teams composed of research scientists, economic experts, ethicists, elected representatives of the people, policy and law makers. The objectives of UIRB-AI are elaborated in detail in a separate section. Unlike an UIRB-AI, the United Nations Interregional Crime and Justice Research Institute’s (UNICRI) Centre for Artificial Intelligence and Robotics has an insignificant impact over worldwide advancement of AI. Being directly influenced by AI, the International Telecommunication Union (ITU), UNESCO, ILO, UNODA should spearhead the formation of UIRB-AI, in partnership with other UN agencies, National governments, MNCs, Universities and research institutes. All these require considerable economic incentives and support from the national governments, MNCs and citizens of every nation.

Why the United Nations?

From the 1920s, the world moved to the League of Nations. From the 1945s, the world moved to the United Nations. It is prudence to avoid any catastrophic events in the present or in the generations to come for the creation of a new economic order. Ideally, to directly empower the governing authorities of the UN is the frugal solution. Empowerment can either be election for UN delegates directly by the people or by the immediate representatives of the people. If not for the UN, national governments or private partnerships cannot implement international laws for AI in an unbiased manner. A globally optimum solution for maximizing world peace can be achieved only when we reach the ideal situation of ‘One world with a common plan’ through major reforms to the UN. Then, one will naturally find the financial budget of the UN staying way higher than any individual nation or a MNC.
Need for an economically superior UIRB-AI

The UN currently plays a diminished role in the world economy (figure 2). It is evident from the graphs that, one can easily predict the life of any Union or Federation from it's economic order. For example, the US government’s federal budget stays way too higher than it’s individual state budgets. Hence the US federal government can potentially promote peace amongst it’s states. This remains true for any major federations like Russia, Germany, India, etc. The graph also explains the potential reason for Britain leaving the European Union. Had the economic superiority of EU stayed higher than Britain, Brexit would have not been an option. Projecting this trend to the global economy, should all nations remain in peace, only a superior organization like the UN at-least as rich as the world’s richest country can do so.

AI Tax and Robot Tax: Revenue generation for the UIRB-AI

In this paper, I introduce AI tax, a novel method to generate revenue for the UIRB-AI. While Deloitte (Del 2017), KPMG (David Linke 2017) and PwC (Milner and Berg 2017) are embracing AI for its applications in taxation, taxation for AI is rarely spoken about. AI and automation is bound to displace jobs across industries. To address replacement of jobs by automation, Bill Gates openly recommended for an Universal Basic Income, financed by ‘Robot tax’. Either the robots or the owners of the robots are obliged to pay an income tax in this scenario.

In the fourth industrial revolution, majority of the jobs will be replaced not just by robots but also by AI. Few giga bytes of machine learning codes and related software could potentially replace the mundane tasks of a future secretary completely. With advancements in Auto-ML and meta learning (Brock et al. 2017), even the machine learning researcher’s job might eventually get replaced in the future. UIRB-AI’s teams should identify, elaborate and generate revenue through taxation on AI based for-profit organizations, to compensate for the job losses they create through the usage of AI. The taxation scheme involves two major hurdles. The first being spotting the difference between replacing a human worker and complementing a human worker. The second being participation of the national governments. For the welfare of its own citizens and that of every other nation, every national government should educate its citizens on the necessity of a new economic world order and participate in ‘AI taxation’ for UIRB-AI.

Multipolar governance for the UIRB-AI

Through a hypothetical ideology of Singleton (Bostrom 2006), Nick Bostrom explains the advantages and disadvantages of a world republic. If the governing authorities of a world republic follow immoral practices, the future of humanity might be put into risk. Hence the UIRB-AI should be developed cautiously by maintaining a balance between centralization and distribution authority. No single individual or entity should be able put the course of humanity into trouble. The government of Switzerland, sets the right example to efficiently govern people with diverse cultural backgrounds. A seven-member council is considered as a collective ‘Head of State’ in Switzerland. This minimizes ethnic conflicts, risks of dictatorship, corruption and showmanship of leaders, since all seven members must sign for top level decisions to be valid. Direct government and federalism policies of Switzerland are commendable by nature. Similar policies must be adopted to govern the UIRB-AI.

Role of AAAI, ACM, ISO and IEEE

Policy makers should continuously co-ordinate with researcher experts to remain updated on what exactly the technology can do and what it cannot. Organizations like AAAI, ACM, ISO, IEEE along with similar such organizations, could potentially work along with the policy makers in the UN and other national governments. Recently, IEEE-USA and IEEE European Public Policy Initiative (EPPI) have publicly made their position statement on AI. IEEE EPPI calling on Policy makers to take leading role in setting a long-term AI strategy is indeed a welcoming move.

Objectives of the UIRB-AI

An economically superior and politically stable UIRB-AI has to nullify all undesirable effects and enhance the beneficial effects of AI as shown in figure 3. The Gartner’s Hype cycle represents the fluctuations in expectations during the evolution of any new technology in general (Fenn 1995). Here, the beneficial effects must lead to the accomplishment of the 17 SDGs (Sustainable Development Goals) formulated by the UN. The undesirable effects include both Class 1 and Class 2 issues that we discussed earlier.

Pragmatically, the immediate course of action could be, forming an UIRB-AI by combining the aspects of Treaty on the Non-Proliferation of Nuclear Weapons and UNESCO’s International Bioethics Committee (IBC). Unlike Nuclear weapons and Human Genetic Modification (HGM), AI is a different type of technology. The source codes itself can be copied, distributed and manipulated very quickly. Soft law approaches can be an effective alternative in place of an idealist’s new world economic order. Every AI research lab and AI research company should get itself registered with the UIRB-AI, disclosing its lab facilities, research members and research objectives. Though such data is already available freely over the internet, such registrations will bring about a second thought over ethical considerations and prevent organizations from illegal activities to an extent. When human intelligence is surpassed through a new algorithm or method in AI, whether it is a narrow AI or Artificial General Intelligence (AGI), the UIRB-AI has to be reported at first. After examining the benefits and risks of the progress, upon the approval of the independent and parallel teams of UIRB-AI, the lab can make the news public or open source it’s code. If required, the lab or company should open its doors for the UIRB-AI for further inquiries. While this might seem like slowing down the pace of technological advancements, it is worth the shrewdness.

The UIRB-AI should take pioneering efforts in encouraging Artificial Intelligence researchers to study and emphasize the ethical implications of the technology they develop.
in their research publications. Development of technologies like that of the 'neural lace' should be made with caution under the direct supervision of the UIRB-AI. AI conferences can be jointly co-organized by the UIRB-AI. It is the responsibility of the UIRB-AI to reward organizations for their valuable research and co-operation in doing so. Universal Basic Income schemes, AI Tax, Robot Tax should be subjected to legislation by the UIRB-AI.

Increased incentives for AI safety research
An analysis made by the Fortune magazine [Insights 2017] illustrated the volume of money invested by various start up companies in the field of AI in 2012 and 2016. Clearly, majority of the new start-ups were more focused on building applications out of the AI technology rather than building a safer AI for the society. This implicitly illustrates the fact that, fewer incentives are received in AI safety research and development.

It is the responsibility of UIRB-AI to take initiatives in increasing incentives for the AI safety research community. A research lab genuinely dedicated for AI safety research funded by the UIRB-AI should be established. Should the attempts in controlling a super intelligence fail, any further attempts to develop one should be banned until a solution approved by the UIRB is obtained.

Agility in actions
The UIRB-AI must continuously evolve its law and order policies to keep up with the pace of technology. The progress in development of AI should not be hindered for extended duration by the UIRB-AI. At the same time, the research labs and companies must act in full co-operation with the UIRB-AI for swiftness in action. Since there are numerous number of research labs and organizations in the domain, all registrations should be made online to facilitate fast paced approvals. Despite the intensity of number of labs, sufficient scrutinizing should be made over the motives of the organization. Though this might not prevent criminal offences from happening, a record of data will help in better tracking of information flow and related criminal activities if any.

Conclusion
It is of paramount importance to achieve the 17 SDGs (Sustainable Developmental Goals) formulated by the United Nations. Fortunately, in the age of the internet, AI so far remains democratized and decentralized to a certain extent. As discussed previously, AI will test the stability of the global political economy (GPE) in the coming decades. To propel AI as an emerging technology in the right direction, through an UIRB-AI, the United Nations, Multi National Corporates, National governments, AI research institutes and citizens of every nation should extensively work together with a sense of unity and compassion. Depending on the diversity of opinions and the particular AI application, the UIRB-AI could reach its objectives by choosing between international harmonization via formal treaties or soft law approaches.

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