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SIGNIFICANCE OF ARTIFICIAL INTELLIGENCE ON GOVERNANCE & PUBLIC SECTOR IN INDIA

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ABSTRACT

The advent of machines power-driven by Artificial Intelligence (AI) have strongly influenced the world in the 21st century. Process-wise, future research on the implications of the use of AI for public governance should move towards more public sector-focused, empirical, multidisciplinary, and explanatory research while focusing more on specific forms of AI rather than AI in general. The future of AI is promising and is offering a wide range of opportunities for scholars and academics. Although the theme has received a considerable attention over the last years, much has been speculated and little is known about its impacts on the Public Administration. Thus, the purpose of this article is to make the result of those impacts less ambiguous. To this end, we have conducted a systematic review to provide a comprehensive analysis on the latest impacts of AI on the Public Administration. Our intent is to narrow the field of study, while AI is being continuously strengthened with new empirical evidences.

KEYWORDS: Public governance, Artificial intelligence for government, Public sector, Digital government; impacts; governance sector in India.

I. INTRODUCTION

Governance, broadly understood as the "action or manner of governing a state" thrives on the ability of the government to ensure efficient, effective, transparent and responsive administration. India is a large and diverse country making the task of governance that much more challenging. Slow and outdated processes and bureaucratic hurdles have traditionally fettered governance in India, but the recent pivot towards the adoption of emerging technologies is re-invigorating the system. Towards this, there has been sustained discourse in the recent past to optimize the use of AI in fostering efficient governance. India, being the fastest growing economy with the second largest population in the world, has a significant stake in the AI revolution. Artificial Intelligence (AI) is poised to disrupt our world. With intelligent machines enabling high-level cognitive processes like thinking, perceiving, learning, problem solving and decision making, coupled with advances in data collection and aggregation, analytics and computer processing power, AI presents opportunities to complement and supplement human intelligence and enrich the way people live and work. Most people would agree that comparing humans and machines is not so simple and straightforward – although a computer may not excel in abstract reasoning, it has the ability to handle a large amount of data much faster than a human brain can do. In recent years, researchers and practitioners are investing on the technological potentialities of AI to handle large amounts of public administration data. Artificial intelligence is generally identified as an interdisciplinary research field that gains special attention in society, economics and the public sector, opening up a variety of new opportunities. The global tendency to use AI technologies in many areas of our life, including complex systems in the field of transportation, space, medicine, research, emergency, etc., evokes debates about its use for public administration. The McKinsey Global Institute advances the United States (US) and China as dominant countries in the AI landscape, with Europe falling behind. Accordingly, the White House, the European Parliament and the UK House of Commons, each issued a report outlining their vision on how to prepare the society for the widespread use of AI, predicting wide reaching changes ahead. In addition, China and the US have recognized the value of AI for the public sector and their competitiveness in the global economy. Likewise, the State Council of the People´s Republic of China has issued a guideline on developing AI, setting a goal of becoming a global innovator in the field, with a total investment of 1 trillion yuan ($147.8 billion) by 2030. If such measures are not already in use, at least some of the elements of AI technologies are already being implemented. Much of the technological capacity and funding for AI in governance in India is coming from the private sector - a trend we expect will continue as the government engages in an increasing number of partnerships with both start-ups and large corporations alike. While there is considerable enthusiasm and desire by the government to develop AI-driven solutions in governance, including the release of two reports identifying the broad contours of India's AI strategy, this enthusiasm is yet to be underscored by adequate financial, infrastructural, and technological capacity. We conclude this article by discussing the implications for the theory and practice and future research. At the G-20 summit in Osaka in Japan, the Prime Minister of India underscored the significance of Digital Economy & Artificial Intelligence. He emphasized the

government's reliance on the 5 'I's that stand for Inclusiveness, Indigenization, Innovation, Investment in infrastructure & International cooperation in developing these two areas. The concept of Artificial Intelligence is based on the idea of building machines capable of thinking, acting, and learning like humans.

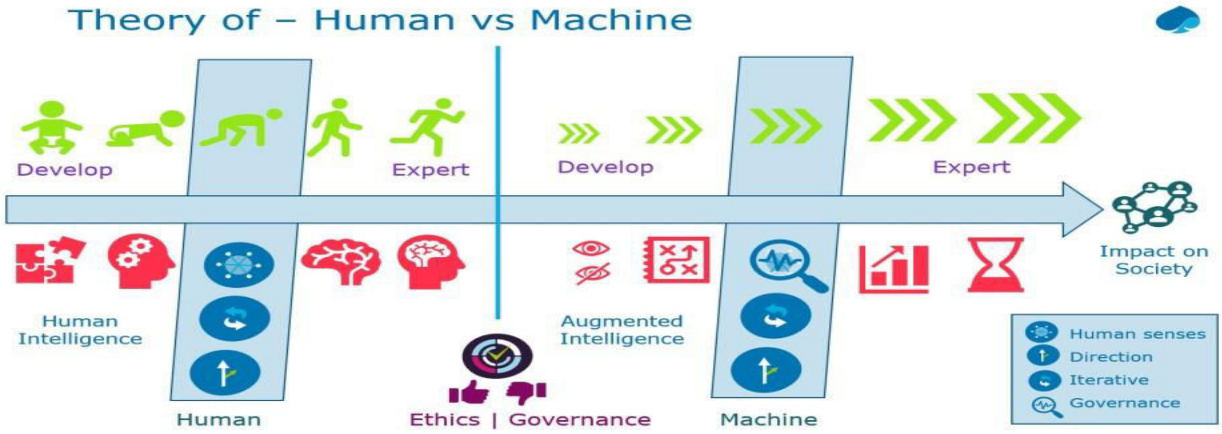
II. TERMINOLOGY

Artificial Intelligence and Machine Learning, for instance, are two buzzwords which are often used interchangeably. However, these two terms do not really have the same meaning. In short, AI can be defined as intelligent systems with the ability to think and learn. Today, several techniques fall under the umbrella of AI. Examples of these are: neural networks – the process through which machines learn from observational data, figuring out its own solutions; deep learning – a technique that allows computational models of multiple processing layers to learn and represent data with multiple levels of abstraction mimicking how the brain perceives and understands multimodal information. In light with the above, machine learning is best considered as a subset of AI – the machine can adjust its own algorithm to the situation and "learn", hence the system literally re-codes itself. The aforementioned techniques have achieved outstanding performance on many important problems in applications.AI is the space inhabited by technologies, such as machine learning and language processing – the combination and application of these technologies, such that they attempt to replicate or outperform our own cognition, could be seen as AI . Heinonen et al. shares the same view, and argue that AI has to do with the theory and development of computer systems able to perform tasks normally requiring human intelligence and, machine learning, in turn, is a subset of AI that often uses statistical techniques to give computers the ability to "learn" with data, without being explicitly programmed to do so. Although many of the aforementioned technologies are being used and developed in the business landscape, their applicability to public administration is believed to be viable in short term. But, how do machines learn? In the human educational sphere, computer simulation, an active learning technique, is now one of the advanced pedagogical technologies used in public administration, public policy and political sciences courses. This technique enables active learning, which means that students actively participate in the learning process. Students play simulation games apart from traditional lectures to gain first-hand understanding of the process of real life. In this respect, Russia has brought some developments to the international scene, in particular as regards with the development of advanced pedagogical techniques in the sphere of public education. Machines also use similar techniques, as the long-standing goal of AI is an algorithm that learns, tabula rasa, superhuman proficiency in challenging domains. Silver et al. explains that Alpha Go became the first program to defeat a world champion in the game of Go by evaluating positions and selected moves using deep neural networks. In other words, these neural networks are trained by human-supervised learning and self-learning, the latter learning is without data or human guidance. There are several other AI-technologies, besides the ones that are presented in this paper. The selection of the aforementioned technologies was not made randomly, as we did a preliminary search on Scopus with the keyword "artificial intelligence" in title, abstract, keywords (311,391 hits): the most used keywords were – (artificial) neural networks (29,531), deep learning (including techniques and methods) (26,050), machine learning (18,543), computer vision (6,458), natural language processing (including systems) (8,441), speech recognition (including semantics and linguistic) (13,476), and for that reason this terminology were chosen for our introductory review. The field of artificial intelligence (AI) is comprised of many disciplines, technologies and subfields. There are dozens of terms that are used to describe AI technologies, and the definitions can be complex and confusing. Right now, artificial general intelligence (AGI) is science fiction. It's what many people imagine when they conceptualize AI: an intelligence that is across the board as intelligent as or more intelligent than a human being. Experts are divided on whether or not an AGI is even possible to build. The potential creation of an AGI raises fundamental questions about the nature of human intelligence that we as a species have not yet answered, including whether or not human intelligence can be reverse engineered and recreated in a machine.

III. METHODOLOGY

CIS recognizes that the term Artificial Intelligence (AI) is multiple in its uses and meanings-- and at times contested. For the purposes of this report, CIS's understanding of AI is that of a dynamic learning system that can be used in decision making, as opposed to a system that performs automated tasks. Our test to resolve the ambiguity between AI and automation is to think of it in the following way - the AI system replaces the brain whereas automation replaces the muscles. To explain further, if a tool was being used to do a repetitive task, or a repetitive decision, it would be automation, while tasks requiring intelligent decision making would be done by AI. The aim of this report is to identify the ways in which AI is being implemented and utilized in various sub sectors in governance. Furthermore, this report aims to identify the key policy, ethical, and legal concerns in development and use of AI in this sector and develop recommendations towards addressing the same while enabling AI innovation. As part of this, challenges in the development and use of AI in governance are also identified. Much has been written about AI and its impact on the workforce, but there is no consensus on how many jobs will be replaced entirely and what types of new jobs will be created. We selected a few examples for this paper: A recent World Economic Forum (WEF) report1, The Future of Jobs 2018, noted that developments in automation technologies and AI could see 75 million jobs displaced. However, another 133 million enrolls may emerge as companies shake up their division of labor between humans and machines, translating to 58 million net new jobs being created by 2022. Companies, governments and employees need to work together to tackle skills shortages and dislocations that occur due to automation, according to WEF. Similarly, Ernst & Young LLP (EY) undertook proprietary research aimed at providing actionable insights to leaders ready to take advantage of automation and effectively drive business transformation. As part of this effort, they mapped Frey & Osborne automation scores to nearly 2,000 occupations in four economies (US, UK, Canada and Australia).2 The EY researchers categorized those occupations into 15 business functions and 50 sub-functions across 16 industry sectors. This detailed mapping allowed the researchers to understand how applicable automation was to different economies, sectors and business functions. Then, leveraging work activity data, EY derived the amount of time that workers spent on individual tasks. Their analysis revealed that potential to automate tasks differs by more than 2X across sectors and up to 7X between functions. Functions are as varied as finance (heavily rules-based, where 80% of tasks hold potential for automation) and learning and development (with only 12% of work potentially subject to automation). Researchers found that every sector can transform roughly a third of its work. Research conducted by the Institute for Spatial Economic Analysis (ISEA) noted the types of jobs that will be impacted by AI and result in job loss3. The data looks at urban centers, compares the job market, and shows trends of metro areas that will be affected. For example, according to the research, the Las Vegas-Henderson-Paradise, Nevada area has a 65.2% share of jobs that are automatable. This research, if predictive of the impact, will result in a re-engineering of many aspects of the workplace. In the public sector, and in many non-profits, administrative work often consumes funds that could be used for direct service provision. Evidence-based strategies to improve the impact of programs increasingly are being used to identify when and how programs are funded. The positive aspect is that algorithms and automation may be able to detect trends that would

take many hours and people to identify. In the non-profit industry, this could be a silver lining because when funding cuts occur, they generally affect administrative overhead first.



AI has significant impacts for the first responder community. One of the most important areas where AI can improve the mission effectiveness of first responders is around situational awareness. One example of this was demonstrated by a public data aggregation technology that could pinpoint the location of the shooter in the recent Mandalay Bay tragedy in twenty-two seconds. Social video feeds were analyzed to detect a muzzle flash that was a large enough anomaly to be pinpointed as the origin of the shots being fired into the music venue. Technology like this can work alongside public safety and response teams to improve their ability to identify and analyze signal information in extremely short periods of time, and can prove pivotal to mission success. Similarly, public safety entities are examining gunshot pinpointing programs where a network of sensors spread throughout a city can allow public safety personnel to more quickly determine where shots are fired and integrate with existing police information to provide mug shots, warrants, and criminal history information before officers even arrive on the scene. AI can be a significant game changer for first responders. They currently carry and manage a myriad of items and tools that can be consolidated into a single smartphone or concentrated in centralized network communication centers. Thus, in the public safety realm, AI is seen as an augmentation to mission ability not a replacement of roles or personnel. This understanding mitigates much of the fear of job or role replacement risk which could hamper these endeavors. Recognizing that governance is a broad term that encompasses many functions and sectors, in our research we have considered five sub-sectors-1) Law Enforcement, 2) Education, 3)Discharge of government functions, 4) Judicial decision-making and 5) Defense. We have chosen these for the following reasons. First, each of these sectors have inherent institutional or procedural barriers to efficiency, which has lead to the use of algorithms in other parts of the world and spurred nascent developments in India. Second, the five subsectors encompass a broad range of governmental functions and also capture various stages of the use of AI. Third, the sub sectors pose diverse ethical concerns and therefore occupy a broad range of positions on the spectrum of regulatory options available when addressing the use and development of governance solutions driven by AI. Our sources for mapping the use of Artificial intelligence in India included secondary sources such as press releases, media briefings and newspaper articles. We hope to supplement this research with more primary information from various crucial stakeholders in the governance sector.

IV. FINDINGS

By analyzing the selected manuscripts, we have categorized three core areas that, in our opinion, deserve to be studied. They are jobs, political leaders/public administrators and, finally, the citizens´ quality of life. Following, we present a detailed overview of the impacts that AI has on each of those areas.

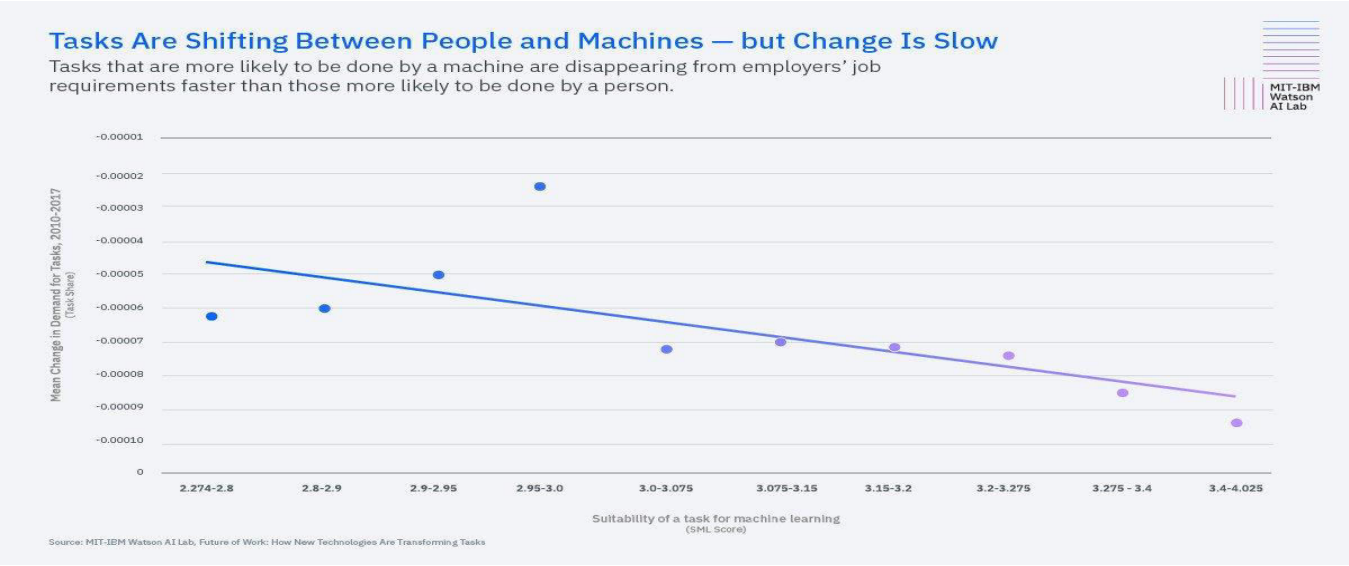
Impacts on jobs: AI will have a significant impact on jobs and work in ways that were unimaginable a few years ago. The most prolific product of these technologies will be on the transport sector, with the commercialization and proliferation of autonomous vehicles. The general trend to replace public employees by robots is becoming obvious and it could happen soon enough. One of most recent and well-known cases is the use of different expert systems or AI assistants that can, based on the analysis of big data, offer a solution to a practical case. In order to cope up with the problems due to the loss of jobs, the workforce will have to be retained to take up new types of jobs which may emerge with the automation of processes – as people lose their jobs, they will have to be retrained and reemployed. Automation or AI is disappearing from job requirements, shifting in the way work gets done; as technology reduces the cost of some tasks, the value of remaining tasks increases, particularly soft skills such as creativity, common sense, judgment and communication skills. “Computers, intelligent machines and robots seem like the workforce of the future. And as more and more jobs are replaced by technology, people will have less work to do and ultimately will be sustained by payments from the government,” predicts Elon Musk, the cofounder and CEO of Tesla. This is a scary proposition in some sense, in that what will we do if all the work is done by AI or robots? Isn’t life tough enough? Don’t we have enough economic disparity and can barely make ends meet today? To add insult to injury, many of the analyses seem to center on displacing the low wage workers. As if they didn’t have enough disadvantages already, their entire economic class will be wiped out is the feeling we get from the news cycle. This is evidenced by robotic warehouses and Chabot’s or automated customer service and we can really feel the changes all around us. According to various reports, the warnings suggest that AI could lead to the loss of tens of millions of jobs. It begs the question, when or what is the time horizon of the adoption of AI and the job loss a reality? Many reports suggest of job displacement or the very nature of jobs shifting. Automation and technology have shifted work in pursuit of lowering costs, increasing efficiency and production. The automobile “displaced” work that was done via horse and buggy, electricity or fluorescent lighting displaced gas lamps and gas replaced coal in many instances. Jobs have been displaced in the past, but in today’s case the rate at which these exponential technologies are growing is moving faster than the rate of human adaptation. That speed at which we are experiencing technological and societal change is only the beginning as many futurists, such as Peter Diamandis, prophesize.

Disaster Relief Management: Algorithms could be used to accurately model the onset and impact of natural disasters such as hurricanes by analyzing available data. Engineers at the University of Oxford worked with disaster relief team Rescue Global last year to model such projections for Hurricane Irma, that battered the Caribbean Islands.256 Algorithmically determined projections were used to identify the areas worst affected and to organize relief efforts accordingly. Citizen Services and E-governance: Artificial Intelligence could be used in a wide range of ways to improve the interface between the citizens and the government and thereby foster much-needed bureaucratic efficiency in India. The functions of Artificial Intelligence in enabling the discharge of bureaucratic citizen services may be categorized in 4 broad ways:

Citizen Inquiries and Information: Robots may be used to replace workers that answer routine requests for information from the government. Chabot's have been used in government office in the US state of North Carolina to generate auditory or textual computerized conversational systems to free up the help center operators line. New York City has also entered into a partnership with IBM's AI platform to speed up their customer-management system that may be used to address citizen queries. The government of Singapore has also partnered with Microsoft to develop Chabot's that may act as digital representatives of the government and accordingly engage with the public. Categorization and arrangement of documents: AI may be also used to efficiently categorize and efficiently arrange a wide range of government documents, including government notifications, freedom of information requests, land records and court orders quickly, thereby freeing up human resources. Routing of Requests and assistance with filing documents: Artificial Intelligence could also be used to help citizens file petitions and route these petitions to the appropriate authority. This function has been developed in Mexico City to streamline bureaucratic hurdles. A free Chabot legal app called Do Not Pay has been used in the US and Canada to help asylum seekers navigate through the vast realm of paperwork, assess whether they qualify for refugee status and ensure that the correct documentation has been addressed. Translation: Translation using AI has already been used by various businesses. For example, Unable crowdsources data and uses machine learning to translate texts into as many as 14 languages. AI was also used to translate government information at the recent Pyeongchang Winter Olympics in South Korea. Comparison with and learnings for India Apart from the agricultural sector, where the government in conjunction with the private sector has made some inroads, India is yet to use AI widely in the discharge of government functions. Use in other countries indicates that the application of AI in this sector could be critical in weeding out administrative malaise-something that India's governance machinery could benefit from.

a) Government law and policy-making:

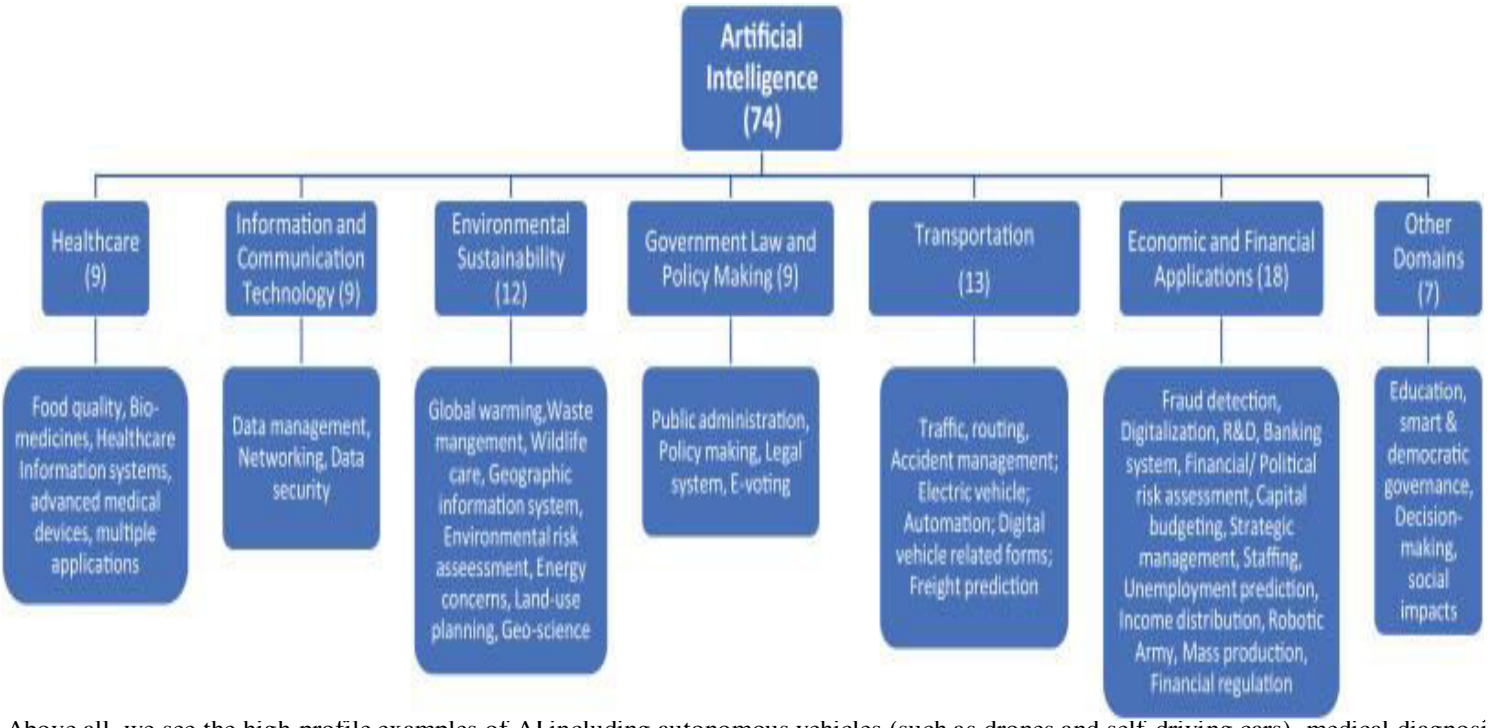
Intelligent public administration helps in promoting the effectiveness of rights and inclusive technological development for assuring the digital dignity of the people. AI can be implemented by the government in public service provision and policymaking, where policy-making is one of the complex processes that occur in ever-changing environments while influencing the three pillars of sustainable development which are economy, society and the environment. Every single political decision is taken in reaction to some societal pressure passing ripples to economic, financial and environmental aspects. A number of AI techniques can potentially improve the policy-making process, including optimization and decision support techniques, data and opinion mining, game theory, and agent-based simulation. AI also has a role to play in legal environment as it has a profound impact on lawyering, judging and law enforcement where tools that support argumentation or the once that use sentence-based technique of case-based or abductee reasoning are used for crime-fighting and also provide automated legal advises in lesser cost. Most interesting application of AI is in administration of faultless election with the help of computerized voting that will require further research in ballot-reader accuracy; national voter-registration systems; new voting methods which may include the usage of telephones and other online methods; and methods of implementing the system integrity and computer-program correctness.



b) **The impact of artificial intelligence on human society**:

Is AI really needed in human society? It depends. If human opts for a faster and effective way to complete their work and to work constantly without taking a break, yes, it is. However if humankind is satisfied with a natural way of living without excessive desires to conquer the order of nature, it is not. History tells us that human is always looking for something faster, easier, more effective, and convenient to finish the task they work on; therefore, the pressure for further development motivates humankind to look for a new and better way of doing things. Humankind as the homo-sapiens discovered that tools could facilitate many hardships for daily livings and through tools they invented, human could complete the work better, faster, smarter and more effectively. The invention to create new things

becomes the incentive of human progress. We enjoy a much easier and more leisurely life today all because of the contribution of technology. The human society has been using the tools since the beginning of civilization, and human progress depends on it. The human kind living in the 21st century did not have to work as hard as their forefathers in previous times because they have new machines to work for them. It is all good and should be all right for these AI but a warning came in early 20th century as the human-technology kept developing that Aldous Huxley warned in his book Brave New World that human might step into a world in which we are creating a monster or a super human with the development of genetic technology. Besides, up-to-dated AI is breaking into healthcare industry too by assisting doctors to diagnose, finding the sources of diseases, suggesting various ways of treatment performing surgery and also predicting if the illness is life-threatening. A recent study by surgeons at the Children's National Medical Center in Washington successfully demonstrated surgery with an autonomous robot. The team supervised the robot to perform soft-tissue surgery, stitch together a pig's bowel, and the robot finished the job better than a human surgeon, the team claimed. It demonstrates robotically-assisted surgery can overcome the limitations of pre-existing minimally-invasive surgical procedures and to enhance the capacities of surgeons performing open surgery.



Above all, we see the high-profile examples of AI including autonomous vehicles (such as drones and self-driving cars), medical diagnosis, creating art, playing games (such as Chess or Go), search engines (such as Google search), online assistants (such as Siri), image recognition in photographs, spam filtering, predicting flight delays…etc.

DO HUMAN-BEINGS REALLY NEED ARTIFICIAL INTELLIGENCE?

Is AI really needed in human society? It depends. If human opts for a faster and effective way to complete their work and to work constantly without taking a break, yes, it is. However if humankind is satisfied with a natural way of living without excessive desires to conquer the order of nature, it is not. History tells us that human is always looking for something faster, easier, more effective, and convenient to finish the task they work on; therefore, the pressure for further development motivates humankind to look for a new and better way of doing things. Humankind as the homo-sapiens discovered that tools could facilitate many hardships for daily livings and through tools they invented, human could complete the work better, faster, smarter and more effectively. The invention to create new things becomes the incentive of human progress. We enjoy a much easier and more leisurely life today all because of the contribution of technology. The human society has been using the tools since the beginning of civilization, and human progress depends on it. The human kind living in the 21st century did not have to work as hard as their forefathers in previous times because they have new machines to work for them. It is all good and should be all right for these AI but a warning came in early 20th century as the human-technology kept developing that Aldous Huxley warned in his book Brave New World that human might step into a world in which we are creating a monster or a super human with the development of genetic technology.

- **The negative impact the AI will have on human society**:

A huge social change that disrupts the way we live in the human community will occur. Humankind has to be industrious to make their living, but with the service of AI, we can just program the machine to do a thing for us without even lifting a tool. Human closeness will be gradually diminishing as AI will replace the need for people to meet face to face for idea exchange. AI will stand in between people as the personal gathering will no longer be needed for communication

Unemployment is the next because many works will be replaced by machinery. Today, many automobile assembly lines have been filled with machineries and robots, forcing traditional workers to lose their jobs. Even in supermarket, the store clerks will not be needed anymore as the digital device can take over human labor

Wealth inequality will be created as the investors of AI will take up the major share of the earnings. The gap between the rich and the poor will be widened. The so-called "M" shape wealth distribution will be more obvious

New issues surface not only in a social sense but also in AI itself as the AI being trained and learned how to operate the given task can eventually take off to the stage that human has no control, thus creating un-anticipated problems and consequences. It refers to AI's capacity after being loaded with all needed algorithm may automatically function on its own course ignoring the command given by the human controller

The human masters who create AI may invent something that is racial bias or egocentrically oriented to harm certain people or things. For instance, the United Nations has voted to limit the spread of nucleus power in fear of its indiscriminative use to destroying humankind or targeting on certain races or region to achieve the goal of domination. AI is possible to target certain race or some programmed objects to accomplish the command of destruction by the programmers, thus creating world disaster. Governments across the globe are preparing for Industrial Revolution 4.0, and it is called as the game changer for the economies. Artificial intelligence can revitalize the public sector, improve the quality of life and give the countries an edge in military and combat operations. According to a report, when it comes to AI, there is both anticipation and dread within a wide range of organization's and industries; and the public-sector is no exception. Conversations with government executives suggest a lack of clear vision as to how AI applications may affect their staff and missions. That, however, is understandable since prior research hardly offers an actionable forecast.

Now as economies across the globe gear up for AI-augmented governments and are deploying cognitive technologies to rethink the public sector, a critical question that crops up is would it spur the adoption of AI

How can one track the development in the public sphere?

In the enterprise setting, AI-based technologies like machine learning, natural language processing, speech recognition and robotics are already making an impact. Governments across the globe are seeking cognitive technologies to improve and revolutionize their day-to-day operations in public sectors.

How Governments across the World Are Using AI

As of now, the field of AI research is dominated by big entities such as Google, Amazon, Microsoft, IBM and China's BAT trinity. But governments from countries like China, Canada, US, UK, UAE, Singapore, South Korea and India have already laid out a roadmap for AI research, adoption and application of AI based tools in the public sector. In terms of research and adoption, Canada and China have grabbed headlines for mainstreaming AI-based applications and pushing the bar in terms of investment in R&D.

In the Indian scenario, according to a report by India-based Swaniti (a social enterprise initiative which works with parliamentarians and administrators to support projects and improve government schemes through technology) AI can bring improvements in areas that require swift and precise decision making.

Smart Traffic Management:

Citing an example, the Swaniti team observed the system deployed for SMART Traffic Management. It is aimed at decongesting traffic and can prevent bottlenecks and reduce the number of accidents. The number of traffic accidents have risen from 6,937 in 2012 to 7,375 in 2016 — by 6 percent. AI can help traffic systems that produce massive amounts of real time data. In a bid to remove traffic accident hotspots, the Swaniti team worked with the Deputy Superintendent of Police (DSP), Karveer Subdivision in Kolhapur, to understand and introduce interventions to reduce accidents. The team collected data on various parameters like time and place of accident and type of vehicle from the last three years on about six to seven metrics. This data was further analyzed and an algorithm detected the accident hotspots that allowed the traffic police team to deploy additional personnel in those areas. Thanks to the implementation of this technology, accidents came down by a whopping 33 percent.

Precision Decision Making in Fertilizer Subsidy:

According to the report, for the last three years barring 2016-17, consumption of fertilizers has not managed to keep up with the demand by at least 5 percent. The Ministry of Chemical and Fertilizers has pointed out that the demand has been consistently over estimated. As per the report, the requirement of fertilizers needs coordination between the State Governments, State departments of Agriculture as well as the Central Ministry — a complicated process carried out by Indian Council of Agricultural Research. It also requires computation of various parameters such as climate, environment, policy and price metrics. AI-based tools can be used to factor in the parameters and provide monthly fertilizer, according to the requirement as well as districts

Just as Google, Oracle, Microsoft, and Amazon are battling to serve the cloud computing and machine learning needs of the US government, the next three to five years may lead to a similar dynamic within India. As the Indian government pushes for digitization and enacts more AI initiatives, private firms will flock to win big contracts – adding to the pool of funds to develop new technologies and spin out new AI and data science-related startups.

The Current Challenges to AI Traction in India:

Despite the initial enthusiasm for AI, there were also a few opinions from experts about a sense of unfulfilled potential and that the country could be doing far more to adopt and integrate AI technologies.

Another common theme we heard often during our interviews was that – culturally speaking – the cost of failure is much higher in India than the West. While failing in an attempt at bold innovation and grand goals might be seen as noble or brave in Silicon Valley or New York City (or even Boston), failure often implies a loss of face in India and some Asian countries. This has historically meant a lack of room for innovative experimentation.

- **Positive impact**

There are, however, many positive impacts on humans as well, especially in the field of healthcare. AI gives computers the capacity to learn, reason, and apply logic. Scientists, medical researchers, clinicians, mathematicians, and engineers, when working together, can design an AI that is aimed at medical diagnosis and treatments, thus offering reliable and safe systems of health-care delivery. As health professors and medical researchers endeavor to find new and efficient ways of treating diseases, not only the digital computer can assist in analyzing, robotic systems can also be created to do some delicate medical procedures with precision. Here, we see the contribution of AI to health care.

Leading the evolution of AI-driven solutions in emerging economies:

While India should use the emergence of Artificial Intelligence in the economy as a means of spearheading the global debate on AI and attempt to drive itself to a leadership position among emerging economies, it should be cautious about using Indian territory as a 'garage' for potentially harmful solutions. The NITI AAYOG Report mentions that India should leverage AI as a 'garage' for emerging economies.319 While there are certain positive connotations of this suggestion in so far as India seeks to occupy a leadership position on these issues regionally and along with other emerging economies shape the global rights based discourse to seek equitable solutions for the application of AI.

Improved access to and awareness of ICT's The government, in conjunction with private sector entities that are working towards launching Artificial Intelligence across sectors must first seek to ensure that all stakeholders have access to and are able to use ICT devices.

However, using India as a 'garage' could simultaneously imply that Indian citizens are used as guinea pigs for solutions that could violate human rights. This should be safeguarded against. Enacting a privacy legislation and having adequate frameworks for discrimination and bias are important steps to towards this. Other guiding principles could be developed such as requiring that projects have clear benefits for India. This could prevent against companies coming into India to develop or test a solution and then exiting. As noted earlier, it will also be important to ensure that the processing of the AI driven solution happens in India itself so that the developer remains accountable to the government and the relevant constitutional constraints. Re-negotiating India's trade commitments to bolster the development of an indigenous AI industry India should negotiate it's trade commitments at the WTO in a manner than enables its nascent AI industry to grow without being branded as being excessively 'protectionist 'Corporations located in the West are attempting to rewrite the rules of a digital economy in a bid to stymie public interest through means including lobbying for 'e-commerce' rules at the WTO in order to maintain their privileged position in the market.320 India should look to robustly negotiate these rules in a manner that enables them to develop an indigenous AI industry that caters to the needs of and remains accountable to the people who these solutions impact most gravely.

According to a Canada based company's report, Global AI Report 2019, India stood at the ninth position in terms of the number of the AI specialists working in the field. The US, China and the UK topped the list. The top ranked countries in this report have many academic institutes with programs on AI. They have therefore a much greater number of people skilled to do research in the field. India, on the contrary, lacks the opportunities in formal education in data science but is slowly trying to encourage the adoption of AI in educational institutes. Starting this year, the CBSE has AI as an elective subject for its ninth grade classes. IIT Hyderabad has launched a full-fledged Bachelor of Technology (B Tech) program in AI becoming the first Indian educational institution to do so. It is also most likely the third educational institute in the world after Carnegie Mellon University and the Massachusetts Institute of Technology to have a full-fledged B Tech program on AI.IIIT Hyderabad is another educational institute that introduced popular executive programs on AI and machine learning and block chain and distributed ledger technologies. Defense forces of India are now venturing into the products and technologies which will aid defense measures using the AI and technologies. In India, corporates have started collaborating with academia on AI. IBM's Blue project is an example.

As the government is discharging a 'public function' whenever AI is used in governance, policy-makers need to ensure that all use-cases in the government sector are compliant with fundamental rights enshrined in Part III of the constitution. In particular, it may be useful to consider the legal principles evolved when analyzing these corpus of rights. This analysis will be particularly useful as it would mean tat we are looking to the existing edifice of the Indian constitutional and legal standards, rather than attempting to import principles that may have been evolved elsewhere:

Benefits:

In Policing: India still has a conventional policing. AI based products open a new window of opportunity to do predictive policing in India. With the help of AI, one can predict the pattern of crime, analyze lot of CCTV footage which are available across the country to identify suspects. Government is digitizing all the records, especially the crime records putting it into one single place called CCTNS where all the data including the image, biometrics, or the criminal history of a convict or suspect is available. In Agriculture: It has many uses, for example, it can help sense one how much water the crop needs. For solving complex issues like efficient utilization of available resources. Analyzing the Data: The AI technology helps in analyzing data and thus can improve the efficiency of the systems like power management

in cars, mobile devices, weather predictions, video and image analysis.
Steps taken by the Government
In 2018-19 budget, the government mandated NITI Aayog to establish the National Program on AI with a view to guiding research and development in new and emerging technologies. NITI Aayog then adopted a three pronged approach undertaking exploratory proof of concept AI projects in various areas, crafting a national strategy for building a vibrant AI ecosystem in India and collaborating with various experts and stakeholders. On 20 March, 2019, NITI Aayog circulated the cabinet note to establish a cloud computing platform called AIRAWAT (Artificial Intelligence Research, Analytics and Knowledge Assimilation Platform. The note circulated by NITI Aayog proposes that the government should pump in Rs.7,500crore rupees over 3 years as well as set up a high-level task force that will oversee the roll out and implementation of AI. The move to create cloud computing platform is part of the government's goal of making India pioneer amongst emerging economies with regards to AI and transform sectors like education, health, agriculture, urbanization and mobility. In Budget 2018, the government announced funds to support the country's AI, machine learning, robotics and IOT sector. As part of the initiative, NITI Aayog in the year 2018, published a draft National Strategy for AI, planning its scope for research, adoption and commercialization. It envisioned AI use case clearly in the sectors like healthcare, agriculture, education, smart cities and infrastructure, smart mobility and transportation. The Commerce and Industry Ministry has also set up task forces to explore the use of AI and Big Data technologies in the country. In the Budget 2019-20, the government has announced setting up of a National Sports Education Board under Khelo India to prepare youth for new age skills, Artificial Intelligence, IOT, Big Data, 3DPrinting, Virtual Reality etc.

Making AI fair, accountable and transparent is one of the most crucial areas in AI research. While there can be no bright-line rules that will necessarily enable the operator or designer of a Machine Learning System to arrive at an ex ante determination of fairness, from a public policy perspective, there must be a set of contextualized rules or best practices that explain how notions of fairness should be utilised in the real world applications of AI driven solutions.294 While broad parameters should be encoded by the developer to ensure compliance with constitutional standards, it is also crucial that the functioning of the algorithm allows for an ex-post determination of fairness by an independent oversight body if the impact of the AI driven solution is challenged.

Routing of Requests and assistance with filing documents: Artificial Intelligence could also be used to help citizens file petitions and route these petitions to the appropriate authority. This function has been developed in Mexico City to streamline bureaucratic hurdles. A free Chabot legal app called Do Not Pay has been used in the US and Canada to help asylum seekers navigate through the vast realm of paperwork, assess whether they qualify for refugee status and ensure that the correct documentation has been addressed.

Most researchers agree that a super intelligent AI is unlikely to exhibit human emotions like love or hate, and that there is no reason to expect AI to become intentionally benevolent or malevolent. Instead, when considering how AI might become a risk, experts think two scenarios most likely:

1. **The AI is programmed to do something devastating:** Autonomous weapons are artificial intelligence systems that are programmed to kill. In the hands of the wrong person, these weapons could easily cause mass casualties. Moreover, an AI arms race could inadvertently lead to an AI war that also results in mass casualties. To avoid being thwarted by the enemy, these weapons would be designed to be extremely difficult to simply "turn off," so humans could plausibly lose control of such a situation. This risk is one that's present even with narrow AI, but grows as levels of AI intelligence and autonomy increase.
2. **The AI is programmed to do something beneficial, but it develops a destructive method for achieving its goal:** This can happen whenever we fail to fully align the AI's goals with ours, which is strikingly difficult. If you ask an obedient intelligent car to take you to the airport as fast as possible, it might get you there chased by helicopters and covered in vomit, doing not what you wanted but literally what you asked for. If a super intelligent system is tasked with a ambitious geoengineering project, it might wreak havoc with our ecosystem as a side effect, and view human attempts to stop it as a threat to be met.

As these examples illustrate, the concern about advanced AI isn't malevolence but competence. A super-intelligent AI will be extremely good at accomplishing its goals, and if those goals aren't aligned with ours, we have a problem. You're probably not an evil ant-hater who steps on ants out of malice, but if you're in charge of a hydroelectric green energy project and there's an anthill in the region to be flooded, too bad for the ants. A key goal of AI safety research is to never place humanity in the position of those ants.

Many AI researchers roll their eyes when seeing this headline: "Stephen Hawking warns that rise of robots may be disastrous for mankind." And as many have lost count of how many similar articles they've seen. Typically, these articles are accompanied by an evil-looking robot carrying a weapon, and they suggest we should worry about robots rising up and killing us because they've become conscious and/or evil. On a lighter note, such articles are actually rather impressive, because they succinctly summarize the scenario that AI researchers *don't* worry about. That scenario combines as many as three separate misconceptions: concern about *consciousness*, *evil,* and *robots*.

If you drive down the road, you have a subjective experience of colours, sounds, *etc*. But does a self-driving car have a subjective experience? Does it feel like anything at all to be a self-driving car? Although this mystery of consciousness is interesting in its own right, it's irrelevant to AI risk. If you get struck by a driverless car, it makes no difference to you whether it subjectively feels conscious. In the same way, what will affect us humans is what super intelligent AI *does*, not how it subjectively *feels*.

The fear of machines turning evil is another red herring. The real worry isn't malevolence, but competence. A super intelligent AI is by definition very good at attaining its goals, whatever they may be, so we need to ensure that its goals are aligned with ours. Humans don't generally hate ants, but we're more intelligent than they are – so if we want to build a hydroelectric dam and there's an anthill there, too bad for the ants. The beneficial-AI movement wants to avoid placing humanity in the position of those ants.

The consciousness misconception is related to the myth that machines can't have goals. Machines can obviously have goals in the narrow sense of exhibiting goal-oriented behaviour: the behaviour of a heat-seeking missile is most economically explained as a goal to hit a target. If you feel threatened by a machine whose goals are misaligned with yours, then it is precisely its goals in this narrow sense that troubles you, not whether the machine is conscious and experiences a sense of purpose. If that heat-seeking missile were chasing you, you probably wouldn't exclaim: *"I'm not worried, because machines can't have goals!"*

I sympathize with Rodney Brooks and other robotics pioneers who feel unfairly demonized by scaremongering tabloids, because some journalists seem obsessively fixated on robots and adorn many of their articles with evil-looking metal monsters with red shiny eyes. In fact, the main concern of the beneficial-AI movement isn't with robots but with intelligence itself: specifically, intelligence whose goals are misaligned with ours. To cause us trouble, such misaligned superhuman intelligence needs no robotic body, merely an internet connection – this may enable outsmarting financial markets, out-inventing human researchers, out-manipulating human leaders, and developing weapons we cannot even understand. Even if building robots were physically impossible, a super-intelligent and super-wealthy AI could easily pay or manipulate many humans to unwittingly do its bidding.

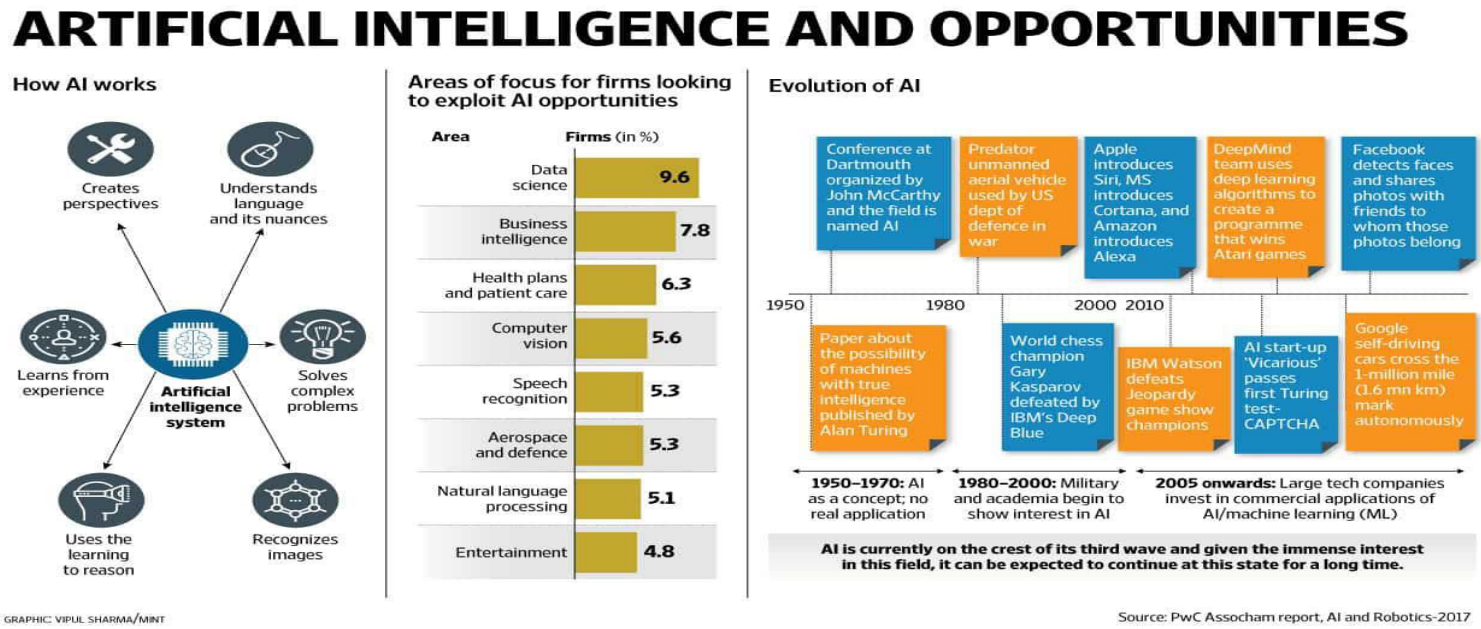
The robot misconception is related to the myth that machines can't control humans. Intelligence enables control: humans control tigers not because we are stronger, but because we are smarter. This means that if we cede our position as smartest on our planet, it's possible that we might also cede control.

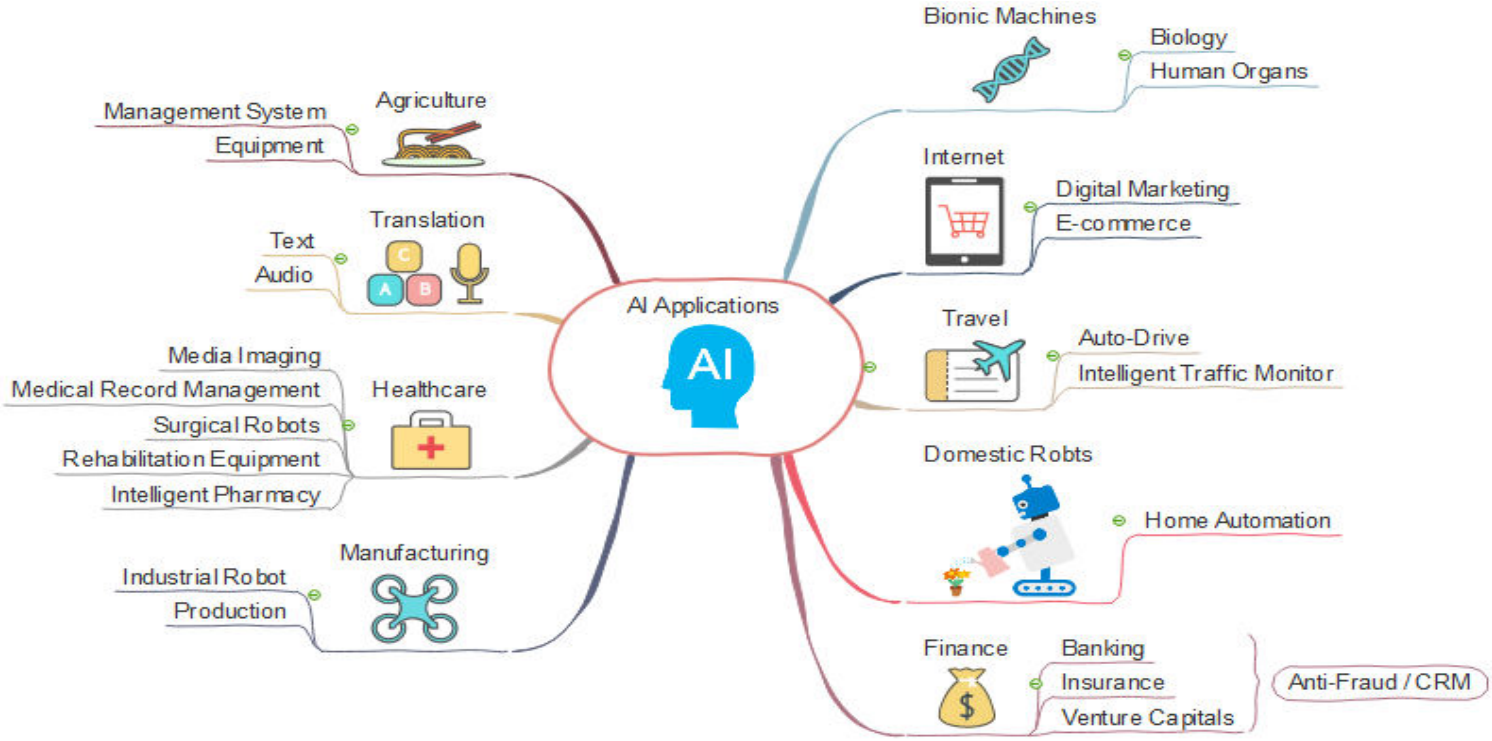
V. CONCLUSION

This report sought to highlight key uses of Artificial Intelligence under the broad sector of governance. The research concluded that despite enthusiasm from the government, both in the form of public statements and key reports such as the recently published report of the AI Task Force and NITI Aayog, the technology is not yet developed enough to be utilized on a large scale. This affords policy-makers the unique opportunity to take a step back and evaluate the impact of similar AI-driven solutions that have been implemented in the west and leapfrog the various capacity-driven challenges and ethical concerns within each sub-sector. It also calls for a pre-emptive evaluation and prevention of the development of technology that may harm individuals through a violation of basic constitutional tenets.

It is expected that AI will continue to have a significant impact on public employment. The general trend is to replace public jobs by machines; therefore, the workforce will have to be re-trained and re-employed. Moreover, AI technology itself is taking charge of improving the quality of public education. While we anticipate that AI will bring evident benefits, i.e. cleaner, affordable and reliable energy, there are other controversial issues that are being brought to the academic landscape. The defense area is one example, in particular, the use of drones, as autonomous weapons systems controlled by AI. While these lethal autonomous weapons systems are expected to be able to take a life without a human decision, it raises several ethical and legal issues. In order to assist the political decisions to meet the citizens' expectations, AI may also have a relevant role. In that extent, we have provided some insights concerning the sentiment analysis, which enables measurements techniques on the citizens' opinions, such as the quantification of the citizens' opinion through social networks. In light with the above, DSS are improving decision-making activities and aid public administrators to optimize public services. AI is making a great impact on the citizens´ quality of life, namely: on the health and security domains, and on privacy and trust. We have identified AI as supporting crisis management technology, since there are few all-in-one systems capable of developing support to decision making process in state administration. Despite the multiplicity of technological novelties and recipes for their implementation, AI is facing associated challenges regarding the citizens´ privacy and trust.

AI is shaping our social life in virtually every country and core areas, such as healthcare, transport or crisis situations. While workers will continue to experience a shift in their roles, focus on the reshape of the public workforce can yield valuable results and provide new avenues for scientific discovery. We also suggest future research to advance the theoretical understanding about the impacts of AI on public administration and to reinforce the arguments of Barth and Arnold, who have stated "the real danger of AI in government is represented by researchers who are divorced from the world of public administration scholars and practitioners and are engaged in discussions of making technological decisions without understanding the implications for governance of the administrative state". Lastly, it will be eventually relevant to study public administration in the light of political science. Thus, trying to understand the political perspective of the application of AI in public services. We argued therefore, that regulatory approaches to AI must not be undertaken in a 'one-size-fits-all' manner. Instead, all options on a regulatory spectrum must be considered. Learnings from developments in the West indicate that technology that attempt to replace human discretion such as autonomous weapon systems or 'Robo -cops' or predict human behavior such as predictive policing algorithms or risk-assessment software's must be looked at with great caution. However, descriptive technology that seeks to determine weather patterns or aid defense logistics should be encouraged with the caveat that the technology developed reaches the lowest common denominator and helps alleviate socio-economic distress. Broadly speaking, the success of the utilization of AI in governance depends largely on the attitude and motivation of the government. The technology could be weaponized to tilt the balance of power between the citizens and the state in favor of the state in a bid to erode fundamental civil liberties such as the Right to Privacy or the Freedom of Speech and Expression or be harnessed as a tool that corrects entrenched systemic inequality and empowers the disregarded. The approach the government adopts is crucial for the future of AI in today's complex and ever-changing socio-economic state of affairs. This article enabled an exploratory categorization of the AI impacts on public administration, which are – impact on jobs, on political leadership and on citizens´ quality of life.





VI. REFERENCES

[1] P. Agarwal, "Public administration challenges in the world of AI and Bots," Public Administration Review, vol. 78, n. 6, pp. 917-921, 2018.

[2] S. Bini, "Artificial intelligence, machine learning, deep learning, and cognitive computing: What do these terms mean and how will they impact health care?", The Journal of Arthroplasty, 2018.

[3] J. Johnston, "Public Administration: Organizational Aspects," International Encyclopedia of the Social & Behavioral Sciences, pp. 12507-12512, 2001.

[4] Artificial Intelligence: End of Human Miseries or End of Humanity
https://mrunal.org

[5] https://ainowinstitute.org/.

[6] NITI Aayog. (2018). Discussion Paper on National Strategy for Artificial Intelligence. Retrieved from http://niti.gov.in/content/national-strategy-ai-discussion

[7] RSTV Vishesh-May 8-2018, Artificial Intelligence
https://youtu.be/rrjZTT6tKdk

[8] Qualifying Aadhaar/Big Data as an enabler for AI the Task Force in its report states that Aadhaar can "Come up with Indian data formats for all the sectors/sub-sectors for Al applications, by drawing upon the available relevant International standards." Task Force on Artificial Intelligence. (2018). Report of Task Force on Artificial Intelligence. Retrieved from http://dipp.nic.in/whats-new/report-task-force-artificial-intelligence.

[9] https://www.google.co.in AI impacts on society

[10] Artificial Intelligence in India: A Compendium. (n.d.). Retrieved from https://cis-india.org/internet-governance/blog/artificial-intelligence-in-india-a-compendium.

[11] https://cis-india.org/internet-governance/blog/artificial-intelligence-literature-review

[12] https://youtu.be/jNP0tcm1GnU