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Use of artificial intelligence in public administration

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Abstract
With the advancement in technology an intense debate about benefits and concerns associated with powerful technologies started. One of the powerful technologies is Artificial Intelligence, which can actively contribute to economic growth and national pride. This paper gives an all-inclusive study of Artificial Intelligence technology as an instrument in economic development and improvement in public administration. The study shows several key factors which led to the moderate development of Artificial Intelligence technology and its implementation in the government regulatory process. With my research paper, I focus to contribute to the social studies of Artificial Intelligence and appearing AI technologies more broadly with a particular focus on the good governance and policy making.

While this paper keeps a view on common trends in recent policies made by government for AI, similar to other offerings in the special issues. I understand the necessity of various regional, national and local traditions and contexts. The conclusive paper insists on international alliance held up by science diplomacy, as well as studying from reckoning ethics and responsible inventions. AI has the capability to change the society and can help in improvement of human lifestyle through better decision-making policies. This piece of idea sees Artificial Intelligence as a critical part in the 4th industrial revolution that comprises the blending of digital, physical, and biological technologies. This paper suggests many ways to improve Artificial Intelligence integration within the national economy sector to attain national and global progress goals.

Keywords: Artificial Intelligence, e-governance, new technologies, automated decision making, economic development

1. Introduction

The increase in popularity of Artificial intelligence-driven by developments of big data has activated active public debates all over the world about the pros and cons of Artificial Intelligence in public administration and appropriate national policies. According to a report in the early '20s, nearly fifty countries have made or are on the verge of making national AI policies. It is necessary to look carefully at how these technologies are applied so that they can help in changing our social, economic, and interpersonal lives. The main factor mounting Artificial Intelligence apart from a nation's growth is its all-surrounding effect on society wide, its implication will give rise to a long lasting and game turning worldwide

Actors involved in the growth of AI are only limited to industry and academics, but for the development of technology prioritizing societal benefits, allowing public participation in governance, and mediating different interests AI should be encouraged. Artificial Intelligence has promised us many wonders including time travel which could transform and revolutionize technology. A few decades back people have little or no any knowledge of scissoring social, political, and ethical problems of upcoming technologies from life- saving to information technologies that mould our lives, but research suggests us many ways to govern them.

Artificial intelligence has a variety of use in administration in areas such as emergency services, health, and welfare. AI can also be used in making public policy as well as help the public to associate with the government bodies through the use of a virtual assistant in an effective way. According to a report "Application of AI in public administration growing rapidly, with early experiments taking place around the world". Use of Artificial Intelligence in government is not new, In late 90's postal services already using AI to recognize the handwritings on envelope and to automatically route the letters. "The use of AI in government comes with many benefits including efficiencies resulting in cost savings by reducing the numbers of front office staff and reducing corruption."

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The principal use of Artificial Intelligence in the governance and public sector includes -:

1. Resource allocation – where administrative tasks are to be completed very quickly.
2. Large dataset – where there is too large dataset for an employee to work efficiently.
3. Experts' shortage -: where basic questions can be answered and niche issues can be learned
4. Procedural task – Repetitive tasks could be performed easily
5. Diverse data – where data takes a variety of forms.

Finally, our research purpose calls for different ways in managing the adverse effect of Artificial intelligence in the good governance and in public sector. It also aims to measure how effective AI is in implementation of government policies and impact of encouraging AI for usage in the public sector for better reach of government to peoples.

2. Methodology
The topic of research is "Use of AI in good governance." The main agenda of the study is the "use of AI to ensure economic development and improve public administration." The purpose of this paper is to mention possible innovations in order to support the use, implementation, and development of AI technologies. To achieve these goals following steps should be taken -:

- Identify various AI using technologies and their uses.
- AI technology in market should be analyzed.
- Detailed study of the history of AI technology development and to consider different approaches in defining the Artificial Intelligence.
- Analyze the implementation of AI technology and its impact on different countries like in Russian federation.
- Identify the support system for the use, definition, implementation, and development of AI to reach the maximum number of people in the country to take opinions while making any government policy.

"The methodological basis of the research is theoretical methods, majorly analysis, synthesis, abstraction, observation, and generalization." This paper uses sources like Federal laws, Resolution of the Russian Federation government, tactical planning documents, and other regulative legal laws and standards.

3. Artificial intelligence: the origin of the modern technologies and approaches
The level of application of information and its accessibility plays a major role in the current phase of socio and economic development, also called as 'Information society.' Under such given conditions, end-to-end digital technologies which includes -:

1. New productive technologies
2. Distributed registry systems
3. Wireless communication and AI based technologies
4. Neuro-technology and AI
5. Virtual and real life technologies

Should be promoted which has the potential to change human lives. Artificial Intelligence can be of same kind to human intellects. Artificial Intelligence is a group of technological solutions that can obtain human cognitive capacity that includes self-learning and obtaining a solution of a problem without a predetermined algorithm comparable to the result of human intellectual activity.

4. Use of Artificial intelligence in Indian Governance
This section explains the use of Artificial Intelligence in Indian governance and policy making for socio-economic development.

4.1 Law Enforcement
India is still in the early stages in developing the technological skill to fully inculcate AI solutions for law enforcement purposes but various AI technologies like "speech recognition, facial recognition, drones, robocops, and autonomous patrol cars" can be used for law enforcement purposes.

4.1.1 Facial and Speech recognition
A key aim of this technology is to enhance safety in public places which includes streets, bus stops, and train stations and many places. In India also 'Punjab police,' in collaboration with 'Staqu' has commissioned the "Punjab Artificial Intelligence System" with digitalized 'criminal records and provided automated research through features like facial recognition and speech recognition.' Facial recognition allows the police force to easily find criminal information.

4.1.2 Predictive analysis
India has made some necessary steps towards the use of some big data analytics and algorithm to process large data to generate predictive policing models. For the smooth running of predictive policing programs improved and sophisticated data collection is necessary. 'National Crime record bureau' is already working in association with Hyderabad-based 'Advanced data research Institute' to evolve the technology to carry out the predictive policing process and it is already implemented in many states. States are installing CCTV for larger and more comminuted data collections that could support Artificial Intelligence solutions. "The Crime and Criminal Tracking System was introduced in 2013 to create a nationwide criminal tracking database by integrating approximately 15,000 police stations, district and state police headquarters, and automated services."
According to the statement by Superintendent of Police, Maharashtra Cyber cell, "they are in the process of building solutions for predicting law and orders problems andcrime mapping.
"It also will be able to generate strong leads on the intents of criminal before the crime takes place." Delhi Police also uses predictive policing methods in association with ISRO called "Crime Mapping." This system provides police forces with "personal Digital Assistants for current access to information at crime scenes. This software enables Delhi police to predict when and where crime might occur by accessing data from Delhi police dial 100 helpline and uses ISRO's satellite imagery to spatially locate 'hot-spots' using clustering algorithm and thereby deploy police forces to make targeted interventions."

4.1.3 Robo-cops
The 'robocops' can play an important role in gripping law

and order and improving traffic management. They can perform a collection of major security-related functions by nurturing security at security checkpoints in places like airports and malls. A Hyderabad- based start-up launches elegant "Robocop", named after 26/11 martyr "Hemant Karkare."

4.2 Use of AI in education
"Artificial Intelligence is predominantly being used in decision making, student services, personalized learning, and student progress monitoring."

4.2.1 Use of AI in decision making
US-based consultancy service provider "HTC Global service are concentrating on setting in motion a web application that will allow university students to make more well thought out and easy decisions when selecting academic courses and electives at universities by analyzing past data with AI and machine learning."

4.2.2 Use of AI in personalized learning
During this tough time of pandemic all modes of education shifted to online mode and many platforms like Codetantra, MS Teams, meet, etc use facial and speech recognition to provide a personalized experience where students and teachers can easily share their content with their mobile phones. So government should encourage online learning portals to provide free education to the people.

4.2.3 Use of AI in student services
Services includes solutions to student's problem such as admission related questions or queries related to government schemes which are mostly manual and require a lot of time to both students and concerned authorities. Chatbots should be created for different government sites to clarify doubts.

Student Progress Monitoring
Government should collect information from various different databases and analyze the data through "Microsoft's Learning platform" to allow personalized observing of students and allocate individualized attention to the progress of students and restraining school dropouts.

4.3 Use of AI in Defense
In defense, Artificial Intelligence is predominantly used for surveillance, intelligence information and reconnaissance, robo soldiers, risk terrain analysis, cyber defense, and Artificial intelligence using weapon systems.

4.3.1 Intelligence, Surveillance, and Reconnaissance
The Indian navy has started using "unmanned automatic vehicles for reconnaissance purposes which include detection of naval mines in littoral waters and conducting surveillance on territorial waters to detect adversaries." Aeronautical Development Establishment recently tested "Rustom-2" an unmanned aerial vehicle to conduct aerial surveillance and reconnaissance. "DRDO" have also designed a robot soldier called "Daksh" whose primary use is to diffuse explosives. "Innefu-labs is working with BSF and Central Reserve Police Force to track social media posts to forecast the location and time of agitations so that appropriate personnel can be deployed." Army also collaborated with a Delhi-based AI company to evaluate "the seasonal data for border infiltration patterns and can

algorithmically ascertain the possibility of border infiltration at certain times."

4.3.2 Robo Soldiers
The Centre for computer science and Robotics (CAIR), a laboratory link with DRDO is engaged in a project to build a 'Multi-Agent Robotics Framework (MARF).' This framework seeks to organize a multi-layered Artificial Intelligence powered architecture that develops a groups of robots that will associate and perform as a team, similar to human soldiers. " Robots already built include a Wheeled Robot with Passive Suspension, a Snake Robot, and a Robot Sentry."

4.3.3 Use of AI in Cyber Defense
Our government is supporting Artificial Intelligence based technologies to strengthen and nourish our cybersecurity capabilities. As a part of it, CDAC together with IIT Patna has undertaken a project that seeks to innovate cyber forensic tools that are driven by Artificial Intelligence which is ready to be supported by enforcement. The government of India has entered into a contract with "Innefu" to analyze the data they need to be obtained from intelligence agencies to gauge what type of threat patterns are there and also predict the future outcomes and solutions or long term benefits of using AI in modern warfare.

4.3.4 Intelligent Weapon Systems
Defense and Research Organization {DRDO} in 2018 developed India's first armed drone "Lakshya-II". India is in the planning of deployment of fully automated "Predator" drones and the S-400 defense system. Indian Army is on its way to a full-fledged use of Artificial Intelligence in its warfare.

5. Carrying out Government Functions
In order to help in delivering government services to citizens and better implementation of policies the government of India has started AI supporting technologies.

5.1 Citizen/government interface/e-governnce
The government of Andhra Pradesh in collaboration with Microsoft developed the "Kaizala" app which is used to collect citizen feedback from different digital media accounts and verify by contacting with the mobile number of the citizen from which feedback came. The feedback which came through this app and government web portals is processed with an "Automated Application programming interface (API)" and sent to the corresponding department for consideration. The Kaizala app is also used to send the automatically generated notices to people of Andhra Pradesh in case of bad weather or different government schemes. AI is also used by the government for monitoring the implementation of governance projects.

5.2 se of AI in Agriculture
The main use of Artificial Intelligence in India within the agricultural sector comes under the zone of "Predictive Analytics" and therefore the Karnataka government decided to use "Predictive Analysis" for the forecasting of commodity prices and has signed a Memorandum of Understanding (MOU) with Microsoft to use predictive analysis for the forecasting of commodity prices. ICRISAT in association with Microsoft is developing an AI based

"Sowing App" powered by "Microsoft Cortana Intelligence Suite including Machine Learning and Power BI which sends advisories to farmers providing them with information about the optimal date to sow by sending them text messages on their phones."

5.3 Categorization and arrangement of documents
As Artificial Intelligence can be efficiently used to categorize and arrange a wide variety of government documents which includes notifications sent by government, court orders, court cases record, land records, court orders etc. quickly. With the advancement in AI based technology it will be easy for the government to respond to citizens more quickly and efficiently, it also enables the citizen too easily and quickly access government notification regarding any schemes. Indian government is keen to implement Artificial Intelligence for managing Indian courts more efficiently and to digitalize Supreme Court and other civil and criminal court records and judgement so that the judgement and records can be accessed quickly.

6.   Challenges faced in development of AI
With the advancement of technology in modern world there is a huge need for the advancement of AI powered technology within the governance, economic, social, technological and regulatory fields in India. But great inventions bring great challenges which required to be identified and addressed while making policy and implementing the technology.

6.1 Increased understanding and Improved capacity of upcoming technologies
For effective implementation of Artificial Intelligence driven solution across various different sectors like governance, economic, education, defense etc. the government should increase it's capacity. For the all-round development of nation it requires large receptiveness, competence, and understanding about information and Artificial Intelligence based technologies and for proper implementation all the individuals of the nation irrespective of their profession they are teachers, policemen or government officials should contribute. A lager part of co-operation should come from the private and public sector in collaboration with government agencies to encourage AI driven solution which is an essential part in nation building now-a-days though, it seems to be complicated to develop a gateway between the developer working with the private companies and government bodies for proper development and implementation of AI driven technologies. The government needs to adapt with the new incoming technologies provide perks like rebate in taxes etc. for the companies working in association with government bodies for the betterment of the country.

6.2 Infrastructure development for implementation of AI
This research paper clearly points that the government still lags in cohesive and successful implementation of Ai driven technologies. The infrastructural prerequisites for the implementation needs to be developed. Inputs and information that can be used as training data in enforcement sector are not that much unified and diverse to make algorithmic model that can precisely capture the large variety of social and economic realities in India and that can be utilized for "Predictive Policing models." Lack in

availability of internet access and Internet of things devices acts as a infrastructure barrier in education. Lack of necessary and advanced technological infrastructure has been identified as a prime challenge in adoption of Artificial Intelligence within defense sector as stated by Defense minister "Rajnath Singh."

6.3 Trust for AI driven models
In India a real concern across different sector arises from the potential cultural uncertainty from every community who are comfortable of using traditional machines rather than particularly intelligent and algorithmic models or we can say AI driven models. Our defense forces do not completely trust on the solutions of operational units that are being developed by CAIR while they are excited and very well know the strategic benefit of developing autonomous solutions. People working at the grassroot like policeman and teachers have no any experience in using techniques that do not involve the use of AI driven technologies so they should receive training and should gain hands-on experience in the field of upcoming technologies.

6.4 Funding for development of AI driven technologies
In present days every emerging economy faces many challenges in obtaining funds for developing different Artificial Intelligence driven solutions. "The government of India has reiterated its enthusiasm for the development of AI-based solutions by allocating Rs. 6,806.3 crores to the 'Digital India Programme' within the 2021-22 budget in an exceedingly bid to enhance funding and skilling within the area of robotics, computing, and therefore the Internet of Things (IoT)." In partnership with Amazon Web Services and Intel, NITI Aayog has launched an initiative in the year 2021 to establish a new experience studio "that will be a hub for experimentation and collaboration to enable problem-solving and innovation between government stakeholders, startups, enterprises, and industry domain experts". Moreover, the studio shall play a key role in revealing the growth potential of Artificial Intelligence by welcoming many AI startups and centers to showcase their products, services, and solutions.

The government is showing interest for the development of AI driven technologies is a positive sign, while it is interesting to watch how funding provided by government is going to be distributed across different sector due to lack in clarity on this issue, the fund must be distributed across sectors that seems to be crucial for socio-economic development of the nation. While our government has already indicated that they are very interested in attracting investment in this sector and this is evident by two reports published by government stating that they have taken a transparent position on regulation of Artificial Intelligence, but government still lags in engaging the domestic and foreign investors or potential start-ups with this arena. The main concern about the investment and funding is the legal and regulatory uncertainty that exists in the country regarding AI driven technologies.

6.5 Privacy and Security of information
Many modern technology like biometric authentication, sentiment analysis and video surveillance obstruct people from their freedom of expression, it also deny the people upon the correct privacy. All prevailing nature of Artificial Intelligence systems in addition with their ability to track

behavior, can have an adverse effect on "liberty of expression." Concerns regarding Privacy and Security of information puts a question mark on the use of Artificial Intelligence. Online access to information about an individual using Artificial Intelligence driven technologies [21-40] during a vast number of situation can also have large impact on the liberty of expression of that person. So, the government should impose strict laws so that individual's information can be preserved.

6.6 Transparency in automated decision
Meaningful information about logic used in the automated decision should be properly explained by the government for transparency. The algorithms used for automated decision making are mainly designed by private corporations, must be verified with proper reasons about how the Algorithm base decisions are limited. As quoted by home ministry "before using algorithms in the sentencing process, the Indian judiciary must observe the assorted calls to line up a standardized sentencing policy to make sure that the decision-making input into the algorithms is as compatible as possible."

7. Conclusion
This research paper clearly discuss and highlights the main point about the use of engineering science within the broad sector of governance. The research shows that despite showing interest from central government in the field of application of Artificial Intelligence on a large scale in the country, reports by NITI Aayog and Artificial Intelligence Task force revealed that the technology is not yet that much developed to be implemented on large scale. Our government and policy makers should access and compare the pros and cons of Artificial Intelligence driven solution that are introduced by west and make appropriate laws for proper implementation of this technology considering moral outcomes of every sector. Introduction of modern technology should involve pre-emptive analysis of its impact on people by violating basic constitutional rights. "The world is on the verge of revolutionizing many sectors through Artificial Intelligence, but the way Artificial Intelligence systems are developed need to be better understood due to major implications these technologies will have for society as a whole." Choices of humans on software development affects the way in which the decisions are made and the way in which they are constituted into organizational routines. All the executed process needs to be better understood as they can have large impact on the general public. World now-a-days working on he development of autonomous weapon system, automated decision make in bodies, robocops etc. to predict human behavior through specialized algorithm. However, many technologies that works for describing weather patterns and descriptive technology that aid defense supplying can be achieved fatly and economically.

India also banned many web applications that stores data and information of the people and had a risk of data leakage. Indian government should also make some policy that limits the abilities of company from collecting data. Many countries has demanded data copies and has fined technology firms on types of data collected making it difficult for companies operating there to expand their business and try something innovative. Europe has implemented GDPR which places strict restrictions on the use of AI and machine learning. This regulation "prohibits any automated decision that affects their citizens."

The success of the use of Artificial Intelligence in government sector widely depends on the support and motivation of the government. Like every coin has two sides, every innovation has pros and cons but we should explore it's good part and prohibit it's bad part. AI has revolutionized all the sectors like governance, defense, education and agriculture by providing automated machines. Now the world needs less man power and can obtain any work more precisely and quickly. Government needs to provide fund and make proper policies for better implementation of AI driven technologies for all-round development of our country.

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