

Role of Artificial Intelligence in Eradicating: How Artificial Intelligence can help to Control Crime and Terror in Pakistan

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Abstract

Artificial Intelligence is gradually becoming stronger in the world. It is the new buzz word. Tons of individual are working on it or about it. Although, less known by some, it is not a very new invention. However, it is coming into practice in every field of life. Due to its eccentric nature, the AI is taking the whole world by storm. The world has started to witness in the news and public dialogues that big countries taking major steps. Many countries are adopting this technology as a matter of their national security in order to control crime and terror. Pakistan is a third world country and lags behind in many things in comparison to the world. However, the country is blessed with tech experts and has a large amount of population using technology, literary or not, that's debatable. Pakistan is a country with one of the largest young population of the world. By more youth means more possible tech users but sadly, Pakistan stands among the lowest in tech innovations in the world. Data is crucial for AI and Pakistan has been lucky enough to collect ample amount of data of its citizens. The issue is utilization of that data. Pakistan has technological infrastructure but that infrastructure requires upgradation time to time and needs to be expanded on a national level. AI software could be used on the same infrastructure but requires tech trained man power. Pakistan requires a national policy for AI which includes security and all other domain where AI could be utilized.

Key Words: Artificial Intelligence, Crime, Terror, Pakistan

Introduction

Artificial Intelligence is gradually becoming stronger in the world. It is the new buzz word. Tons of individual are working on it or about it. Although, less known by some, it is not a very new invention. However, it is coming into practice in every field of life. What was just an imagination of few is becoming a reality for many in the world. Technology is advancing faster and taking less time to be adopted than ever before. As it almost took many years from writing to printing press but few to get to the emails. It seems that we are at the dawn of the new age, the age of AI. This world has already entered into the age of robots to practically work with humans with the help of AI. Weather forecast, email spam filtering, Google's pursuit expectations and voice recognition such as Apple's Siri, Microsoft's Cortana and Google's Assistant are few major famous developments. It is natural that any new invention receives opposition and criticism but it does not decrease its importance and usability and the AI has both with much more.

Due to its eccentric nature, the AI is taking the whole world by storm. The world has started to witness in the news and public dialogues that big countries taking major steps for artificial intelligence like "*China plans to use artificial intelligence to gain global economic dominance*" or Big leaders saying big things in support of AI such as Russian President Vladimir Putin said, "*The Nations that leads in AI will be the ruler of the world*". An American investor and futurist said about AI, "*AI will reach human levels by around 2029*". The world is witnessing huge investment in the AI by the countries as it is the new form of race between the countries for example investments between North America and Asia in which particularly China is pretty much highlighted but there are other parts of the world like Europe is taking keen interest in the subject. Artificial Intelligence is one of the

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most important subjects which would eventually change the nature of security domain in the world. It is the also a major reason why countries are seriously concerned about it.

AI is growing at a very rapid speed in the security domain. Many countries are adopting this technology as a matter of their national security in order to control crime and terror. AI comes with very idiosyncratic challenges. It has been reported that some criminals and terrorists also got their hands on this technology. So, where there is a positive use of anything at the same time, it could be used negatively as well. Where many countries are using much about this new invention, it is to be known that what Pakistanis doing in this regard. Pakistan is a third world country and lags behind in many things in comparison to the world. However, the country is blessed with tech experts and has a large amount of population using technology, literary or not, that's debatable. Along with this, Pakistan also has a large crime rate in its big cities like Karachi and Lahore and has fought with terrorist for a very long period of time. The main focus of this research paper is how Artificial Intelligence can help to control crime and terror in Pakistan. We know that big countries in the world have already started to use the AI in their security domains, now what Pakistan could learn from those countries? Where Pakistan stands in Artificial Intelligence? What are the challenges and Opportunities? These are some the major questions which would be answered in this research paper.

Theoretical Framework

The topic in this paper would be addressed through the lens of Securitization theory. The theory states that policies or more precisely any national policy or security policy is not naturally made in any state but it is designed or formulated by the politicians, policy maker and rulers of the state after considering an issue a major threat or alarming in nature. As far as AI is concern so it should be taken seriously by creating an awareness about it on a national level. There is a reason why big countries are working hard to take a hold over this technology. Moreover, as the Russian President Putin called it a major tool to rule the world for any state so, it is important for Pakistan to consider AI as a major tool for security both internally and externally. This fourth industrial revolution is recognized by the current president of Pakistan but Pakistan's as a state need to do more.

Historical Background

The history of AI goes back to the ancient times when there used to be tales about artificial entities empowered with consciousness or humans like abilities. Since the time of at least ancient Greek, mechanical men and artificial beings have been dreamed about such as Talos which was a giant made of bronze and acted as a guardian of the Island of Crete or Pygmalion, a legendary king and his female statue named Galatea which came to life and according to some believes they both also conceived a child. Progressing forward toward the middle ages and away from myths of ancient times, realistic humanoid automatons and other self-operating machines were built by craftsmen from various civilizations. Some of the prominent are:

Ismail Al-Jazari

He was from the Turkish Dynasty of 1206. He is known to be the designer of what is known as first humanly programmed robots. He created a boat carrying four mechanical musicians powered by the flow of water. Moreover, he also invented fountains which could automatically turn on and off. His most famous creation was the elephant clock, a water driven device which is still reproduced or replicated at many famous places like Ibn-e-Battuta Mall in Dubai. His other inventions in this regard are: automated moving peacocks, automatic gates, water wheels etc.

Leonardo Da Vinci

Leonardo Da Vinci was indeed one of the greatest minds in the history of mankind. An Italian polymath lived in the age of Renaissance; Da Vinci was a uniquely talented individual. With many other inventions, he is also known to be the creator of some early man-made self-driven machines such as mechanical lion which was able to move forward and backward and present flowers, self-propelled carts which could be linked with modern-day driverless cars and mechanical knights which could wave its arm and move its mouth.

There are other examples as well. It is no lie that the conception of robot or thinking machine has been a man's dream for centuries also a nightmare. Humans have always been working to discover something out of it according to their needs and desire. It is because of that artificial intelligence has been evolving to advance level.

Evolution of AI

AI has evolved to a very advanced level in the past years. Although, humans have been using it in some form, however, it became more efficient and powerful after the invention of computer and internet. Computer technology has made it possible for AI to perform its tasks in its full form. Today there are many users of AI. The technology is in our hands in various forms. We are using AI in our daily tasks. Tech companies are working hard to include AI in their products. However, less than a century ago, AI started to take the shape of reality from fiction.

Alan Turing

With the dawn of computing in 1950s, Alan Turing was the man who was clearly thinking beyond his age. It was just the beginning of computer invention but this man was already looking for any ability of machines to think. His most famous work named as Turing test is still popularly used for checking the ability of machine thinking. His idea was not really widely accepted as he himself claimed that he has no much positive evidence to support his claim but it was indeed a turning point towards a beginning of a new technological advancement.

Marvin Minsky

He was an American renowned scientist who spoke or thought about Machine's ability to think or simply Artificial Intelligence after Alan Turing. Minsky established Massachusetts Institute of Technology's AI in 1959. He was among very few people who did not just glorify the computer invention but considered it would become a powerful tool. He was of the belief that human intelligence could be recreated through computer technology. He also wrote two books in this regard: *The Emotion of Machine* (2006) and *The Society of Mind*.

After these two, the AI surge began. Moore's law iterated that the capacity of computers increases after every two years. Many scientists came with their own theories. AI even became a major part of movies like STARWARS with other future technologies. It took very less time when the imagination started to take a shape of reality. Today we live in the times of big data. Information is flowing faster than a speed of light and this fast flow of data and information has compelled all the industry i.e., banking, marketing, education, and all, to adopt artificial intelligence in order to make their work efficient and fast. Even while writing this research paper, the AI is helping to write fast and without any grammatical errors. In short, it is correct to say that AI has evolved from fiction to reality to now human level.

Present Scenario

There is no doubt that Artificial Intelligence has entered our life in many ways. We have driverless cars, we have watches who tell our heartbeats and pulse rate, we have mobiles which keep a record of our activities and remind us what we supposed to do, companies are introducing AI powered avatars and bots for their CSR, one name the field, AI is present there in some form. Again, it is to say that even while writing this paper, AI is helping to write fast and without any grammatical errors. So, AI is everywhere today. However, in order to understand the current scenario of AI presence and advancement, one could have a look at three or four examples:

BabyX

BabyX is one of the major projects of soul machines which is Auckland's bioengineering laboratory for animate technologies. It was created by Mark Sagar, the CEO of the company. He modelled this digital avatar after his own daughter. This avatar uses the computer camera and artificial algorithms to interact with humans and respond in a humanly way. BabyX is not just one project, Soul machine is one of the pioneer companies which are working on digital avatars. They have not just created BabyX or other baby digital avatars, they are also working on making professional digital avatars which are helping different industries to have their human resource presence digitally through these avatars like CSRs, Doctors, Teachers etc.

Human Cloning and Digital Immortality

Immortality has always been human's biggest desire and human cloning has been one of the greatest fears of humans from other humans. The Artificial Intelligence has now started to turn this desire into a reality. The upper mentioned company, Soul Machines is also working on digital immortality. In a YouTube original series, it was shown that a famous American Music Artist is aiming to have his digital immortality through his own avatar which runs on AI algorithms and replicates his whole original existence as a human. This proves that how much Artificial Intelligence is powerful and capable. Now if we talk about human cloning so, we know that humans are efficient robots through AI which are performing humanly tasks. Keeping in view how digital immortality has become a reality now, we are not too far when these digital avatars could turn into robotic avatars, complete replicas of humans which would act like their original human beings.

Cyborgs

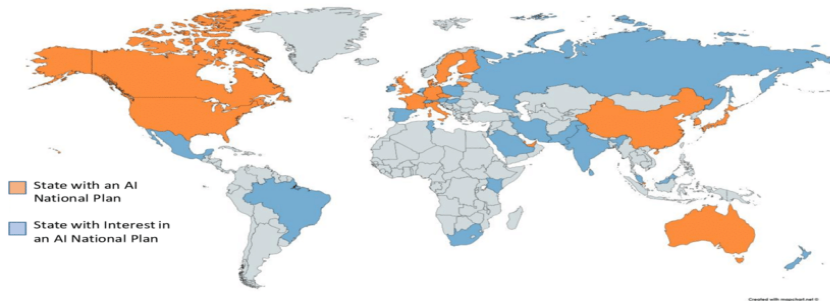
With immortality, cyborgs have been human's another big temptation. Either to become more powerful or even immortal, cyborgs have been attracting humans in several ways. Using technology with organic parts of body could be truly fascinating for many. AI has not failed to impress the world in this regard as well. Although we have been witnessing cyborgs from a very long time, in movies like terminator and marvel series or in the form of artificial limbs however, with help of artificial intelligence, cyborgs are becoming smart as well. Gill Weinberg who is an Israeli-born American musician and inventor has taken the use of cyborgs to the next level. While people are of the view that AI is going to replace human, Gill is of the view that it is going to enhance human. He has created a robot which he calls "SIMON" which can listen the pattern of music played by humans through machine learning and then could play it along them. "SIMON" is a groundbreaking innovation which has gained attention of a lot of other musicians. Gill with his team also created a prosthetic arm for a drum player who lost his limb and was finding it hard to play again with an artificial limb. Now this invention helped the drum player somehow but still it was not providing the precision which is required to play drum beats cleanly. So, this led them to create an actually prosthetic hand for the drummer. Now this prosthetic hand is not just an ordinary prosthetic hand which only works with EMG technology, it works with ultrasound technology which is more precise and accurate. So, this innovation which Gill calls "SKYWALKER" hand has truly revolutionized the use of cyborgs by humans.

Artificial Intelligence in Military and Security

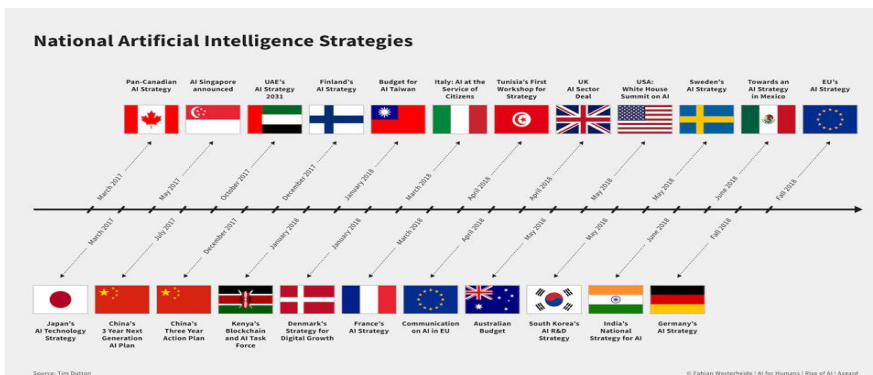
There could be many examples for the use of AI. All three of the upper mentioned examples has brought us to how AI could be use in the security which is the major focus of this paper. As Kai fu Lee in his book AI super power calls AI arms race a new kind of struggle for power between USA and China, AI is indeed truly a powerful tool for any country which is aiming to gain an edge over the others. This is why Russian President stated about AI that "The Nations that leads in AI will be the ruler of the world" USA has already initiated to amalgamate AI into its military through an initiative called "Project Marven", which it has been using in Iraq and Syria to identify insurgents. Now USA is not alone in this regard. China and Russia are also aiming to include AI technology into their military and security domain. China is already under the radar of many liberal watchdogs that it has started to use the AI technology in surveillance at massive level. China calls it a major step for security in the country internal and external both. Russia, although behind USA and China, is working on including AI technology in its military. So, countries are realizing the importance of AI technology for their military and security.

Artificial Intelligence in the World

As discussed earlier that some ground breaking innovations have occurred because of advancement of Artificial Intelligence in the world, all of the major countries are utilizing this technology according their capacity. Many countries have defined their national strategies for AI and many are planning to have one as demonstrated in the figure below.



According to an estimate, an amount of US \$152 billion dollars have been allocated for AI by the states of the world. Moreover, governments of 20 states are funding in AI programs in their respective countries. Below figure describes the National strategy towards AI by the different countries of the world.



China

As to talk about China so, it is clearly aiming to become an AI super power. Kai Fu Lee, in his book, has optimistically iterated that China according to its AI strategy and initiatives will soon become and AI super power. China has a lot of edge in AI innovations and plans than other countries specially USA. China announced its “*New Generation Artificial Intelligence Development Plan*” in July 2017 with a clear aim to become an AI super power by 2030. Now the plan basically has three agenda points: “*To tackle key issues in research and development, pursuing a range of products and applications and cultivating an AI industry*”. In the same year Chinese government announced a three-year plan for the promotion of “*New Generation AI Development Plan*” and this was part of China’s another bigger national plan, “*Made in China 2025*”, which was aimed to be linked with new (digital) Silk Road. In 2018, Chinese official news agency reported that China was planning to invest an amount of 13.8 billion Yuan for building an AI development park which was suppose to house 400 enterprise and estimated output of 50 billion annually. With such lucrative measures, China is not stopping and going at a rapid speed to attain a status of AI super power and the country is truly ensuring its economical, military and diplomatic interest are safeguarded in this regard.

United States of America

Being the present super power, USA is also taking the AI very seriously. In 2019, then president Donald Trump signed an Executive Order for an “*American Artificial Intelligence Initiative*” with a focus on five key areas: “*Investing in AI research and development, Unleashing AI resources, Setting AI governance standards, Building the AI workforce and International engagement and protecting our Aladvantage.*” Although this initiative was inspired by a several researches and publications from the past, it received a lot of criticism due to the work done for AI by its arch competitor, China. Anyhow there have been some investments by USA’s state institutions like the Defense Advanced Research Project Agency (DARPA) announced to allocate an amount of US \$ 2.0 billion for an initiative for AI for five year plan. In 2019, US legislature brought Artificial Intelligence Initiative Act to

coordinate a national strategy for the cause by allocating funds of around US 2.2 billion of federal investment. In private sectors big giants like Google Facebook, Microsoft, IBM, Tesla, etc. are investing hundreds of billions of dollars in AI to secure their market sector.

Pakistan in AI

Although, US and China are not the only countries to be working for Artificial Intelligence however, they are indeed the biggest. This is the reason why their race for artificial intelligence is in some point of views known as the new cold war. Coming towards the topic of this paper, Pakistan has been unable to actually understand the importance of the AI. If there was any then it was not properly pursued to the state level. Current President of Pakistan, Dr. Arif Alvi showed his concern in an article which he wrote that why the country is not taking the advantage of this technology and said that the quality of software engineering graduates is not up to the mark while India ranks third in terms of quality of research. President Alvi has initiated “*Presidential Initiative for Artificial Intelligence and Computing*” with a goal to reshape the country through education, research and business by adopting latest technology which is offering 4 programs e.g., Artificial Intelligence, Cloud Native and Mobile Web, Blockchain, Internet of things and AI.

Pakistan is a country with one of the largest young population of the world. By more youth means more possible tech users but sadly, Pakistan stands among the lowest in tech innovations in the world. According to a survey done by global innovation index in 2019, Pakistan ranks 105 out of 129 countries while India ranks 68 which is alarming. Without, technological innovation, how AI could flourish in the country? Department of Robotics and Intelligent Machine Engineering, was the first department to work on AI, established by NUST in 2011. However, *The National Center of Artificial Intelligence* at NUST could be consider as the first initiative for the field by the government of Pakistan in 2018. In order to do research on Artificial Intelligence a think tank is also set up with the name of Center for Aerospace and Security Studies but it has only been able to produce one paper related to AI up till now. As President of Pakistan said that Pakistan needs to be in booming landscape, these are just baby steps.

The point is, Pakistan is not a country which has no technological presence but Pakistan lacks innovation and some policy-oriented approach by government. In Pakistan’s first Artificial Intelligence Summit 2019, the current Minister for Science and technology, Chaudhary Fawad Hussain iterated that Pakistan was the first country to create machine readable passport and Pakistan has been able to collect data of 22 billion people through NADRA. Not to forget Pakistan has also collected the data of 140 million mobile phone sims through biometric identification. So, the data collection which is crucial for artificial intelligence to perform efficiently, is rightly collected by Pakistan but the country has not been able to utilize that data effectively in this regard. It was just in the last year when Pakistan customs department decided to use facial recognition system and Sindh high court also order prisoners biometric identification at the end of last year but this is not enough. If remain in the security domain so, without data identification of any criminal or terrorist activity is impossible. To deal with such issues, National Center for Artificial Intelligence has established an Intelligence Criminology Lab in Lahore with a goal of application of AI to prevent and mitigate crime in Pakistan. Another data collection tool is Prime Minister’s citizens portal which collects data on the basis of complains. As its better late than never, these are indeed positive steps but the issue is of implementation for which infrastructure and tech trained man power is required which Pakistan has very low and the procedures in Pakistan are quite old and slow.

Artificial Intelligence is something which could be used in both civilian and military security domains. The technology which is used in facial recognition and autonomous vehicles could also be used for autonomous weapons as well. An important reason for application of AI in military is that it enables military to have better precision, intelligence gathering detection, enhanced target recognition and vision. Moreover, in contemporary militaries AI has been used in UAV’s and LAWs, missile defence systems, submarines and Air crafts. Just like many countries are investing in AI, in South Asia, Pakistan’s arch rival is also heavily investing in AI technology for its military purpose and It has already established a Center for AI and Robotics in this regard. According to an estimate, India’s capital investment in AI related technologies worth 50.0 billion. Now where Pakistan has started doing research on AI, Pakistan lacks investment as AI research and development requires huge monetary support. Now what Pakistan could do in current circumstances is to have coordination among the security institutions and department. Moreover, in the whole world, universities are linked with the industry of the states but in Pakistan

that has not been the case but now Nutech University has been established and given a task to link the industry and universities together but that is again a very small step. Pakistan requires a national policy for Artificial Intelligence for implementation of policy-oriented goals for AI at a national level.

Recommendations

Although Pakistan's situation is not up to mark in the field of AI but this is a good sign that the country has started to recognize its importance. Although, research is being done in different areas but the security domain requires some serious attention as it is the most crucial area. Most of the countries are using AI technology more for their security domain as compare to other areas. The prediction which states that data is the new oil is actually true. In today's time, information is actually more valuable than money. By information means every information of a person's life which is being capture in the form of data. Pakistan has this edge of having data available of its citizen but in order to eradicate crime and terror, Pakistan need to utilize that data by utilizing Artificial Intelligence.

- First and most importantly, Pakistan needs to formulate a national policy for artificial intelligence in order to allocate financial resources for its projects specifically and create some legal laws for its use.
- Now for this purpose, an important thing is to create national awareness because AI is real and we need to accept it in fact its already in our hands in the form of smartphones. Our private sector may have realized it to a small extend but in government sector things are totally outdated and old so, there should be awareness and recognition of AI as real new technology which would going to change the world.
- Pakistan has data available in ample amount but the data needs to be utilized through big data and neuro network technologies for which coordination among institutions is crucial.
- Pakistan's security organizations are using technological support but those are not daily updated and upgraded. By using AI powered software, things like surveillance and recognition would drastically improve as countries like China and USA are already using it for example using AI software in CCTV cameras could bring a lot of improvement in facial recognition, weapon detections, car identifier etc.
- All the Pakistan's security personals should be trained and equipped with new innovative technologies.
- Another important step which Pakistan need to do is to link universities offering AI degree programs with the IT industry as well as security organizations and departments and it should be implemented on a national level. It is because universities are hub for research and innovations and if they are rightly connected with the industry so, it would create a lot of jobs and bring new ideas to fight crime and terror in the country.

Conclusion

The upper mentioned recommendations are not much but in humble capacity crucial for Pakistan. The Artificial Intelligence is indeed the reality. The more any country recognizes AI, more it could take important and required steps for it. In order to eradicate crime and terror, AI could make a lot of things easier and faster. This is the reason why, most of the countries are utilizing this technology for their security domains. Data is crucial for artificial intelligence to work properly and Pakistan is lucky enough to have been collected of its people in ample amount but the country has not been able to utilize the data. Pakistan has tech experts although in very less amount but they are, and the country has also not been able to use this human resource the way it should have been used. Although, the country has started to recognize the importance of AI and thing are moving towards the right direction but as we are already quite late now the country needs to take drastic measures. Currently, there are 21 universities in Pakistan which are offering degree programs in AI, they all need to be linked with the IT industry and government security departments so that quality research could be done and intelligent minds could be picked up according to the demand of the market and security scenarios. To make a long story short it is to say that the race for artificial intelligence is real. Russian President calling it a major tool for any country to lead the world is bring serious security implications. So, Pakistan should take it seriously just like it took the nuclear technology seriously. This fourth industrial revolutions would turn out to be more lethal than the nukes. If people like Elon Musks, Bill Gates and Hawking have warned that a governance system should be establish for AI so, one could imagine how much potential catastrophe AI could bring for human kind if not managed or

handled properly. Pakistan is a country with a high crime and terror(in some parts) rate so, the country need to take maximum hold on this technology and take maximum advantage in order to eradicate crime and terror in the country. Its already too late but its better late than never.

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