Robotics and Artificial Intelligence (Ai): Raising Some Moral Questions in Nigerian Institutions

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Abstract

Artificial Intelligence and robotics have taken the center stage in the world thereby creating irreplaceable values to humanity. Nevertheless; much attention has been drawn to their values towards making the world a better place and less attention to the moral challenges emanating from the abuse of robotics and Artificial Intelligence. Beyond the obvious appreciable values in their use, this paper bears much concern on the disheartening effects of the ethical abuse of Artificial Intelligence and robotics both from the creator's end and the users' end especially in Nigeria. Using expository and analytic methods this paper exposes and analysis the values, use and abuses of Artificial Intelligence and Robotics in Nigerian institutions. Artificial Intelligence and robotics have been of great value in institutions such as; finance, politics, military, education, communication/media, cyber security, etc. Unfortunately, the ethical implications on the abuses of Artificial Intelligence and robotics have been so devastating yet not much questions have been raised beyond the alarms by victims. Thus this paper not only raises moral questions on the abuse of Artificial Intelligence and robotics, it calls for more attention and consciousness of the society to this menace. Also, this paper encourages experts in this field to deepen studies on guides against such abuses and the judiciary to enact comprehensive laws to this effect.

Keywords: *Artificial Intelligence, robotics, Nigeria, Institutions, etc.*

Introduction

Understanding the Concepts of Artificial Intelligence (AI) and Robotics

Never before has Artificial Intelligence captured the attention and tickled the fancy of a generation than the recent time. According to Philip Larry, this interest goes beyond the technological classes but has gained the interest of philosophers, historians, theologians,

psychologistsand film makers who provoke even scaring qualities about future machines and Artificial Intelligence. Different nations compete on Artificial Intelligence developments. Little wonder United Arab Emirates appointed a minister of state for Artificial Intelligence when they launched the National Artificial Intelligence Strategy for 2031. This move was followed by America signing of the America Artificial Intelligence Initiative and subsequently by China, India, etc.

Artificial intelligence can be said to be the simulation of human intelligence processes by computer based software. This is applicable in natural human language mimicking, speech recognition, machine learning/vision, machine services, etc. Robotics refers to the field of engineering that focuses on the design and manufacturing of physical machines that are capable of substituting a human being in which case such machine is referred as robots. These robots assist in the performance of tasks especially very humanly difficult tasks with higher speed and consistency. Robotics has a significant focus on hardware, whereas Artificial intelligence is purely based on computer software. While Artificial intelligence is a branch of computer science and genuinely based on software, robotics is a branch of technology that mainly deals with hardware and physical robots but make use of Artificial Intelligence as its brain.

The word Artificial Intelligence was coined in 1956 by John McCarthy at Dartmouth conference. It described the ever-changing set of capacities of simulating human intelligence as new technologies are developed. Thus Machine learning software applications become more accurate at predicting outcomes through machine learning algorithms. Machine learning algorithms make use of historical data as input to predict new output values and validity

of outputs is dependent upon the volume of data sets to train on. One of the major champions of Artificial Intelligence was Alan Turning who wrote, "I propose to consider the questions, can a machine think?"[1] From this position, he questioned further, "whether or not it is possible for machine to show intelligent behaviors".[2] He devised the Turning test which measures the ability of a machine to stimulate human conservations. According to Turning, since we can only observe the behavior of machine, it does not matter if it is actually thinking or literally has a mind. More so we cannot determine these things about other people yet we have a polite convention and we presume that everyone thinks[3]. Thus Russell and Norvig consented to Turning that AI could be defined in terms of "acting" and not "thinking".[4] They have no consciousness of theirs rather act according to already written machine language algorithms.

Artificial Intelligence and robotics have proven to be of great advantage to humanity; way we live, work, and play. In business, AI and robotics have played great human-replacement roles especially handling some automated tasks such as customer service work, fraud detection, quality control, detail-oriented task in financial industries, marketing, product design, etc. Industries such as; banking, transportations, entertainment, media, law, Alphabet, Apple, Microsoft, Meta, etc use AI technologies and robotics to improve operations and outpace competitors. Companies use AI and robotics in job recruitment, ATM, Waymo'self-driving cars, Google brain, etc. Also, generative AI helps in political analysis and predictions of election outcomes with precision.

By the use of artificial neural networks and deep learning, AI technologies process large data faster and make predictions more accurately than human possibilities. Heavy-data tasks of industries such as; academia with machine language driven approaches in

learning[ii], government organizations, banks, pharmacists, insurance, meteorological discoveries and management, e.t.c are processed faster with AI technologies. In the medical industry, groundbreaking works have been done towards improving diagnosis[5] especially detection of breast cancer, ovarian cancer and other diseases which practitioners met with great difficulties regarding their diagnosis and cures.[6] In the military, robotics can be used to fire guns, disarm bombs, carry wounded soldiers, detect mines, fire missiles, fly, etc.

Nevertheless, one cannot sweep under the carpet some challenges posed to smooth use of Artificial Intelligence and robotics. Foremost, one of the greatest challenges to AI and robotics is the insufficient availability of professionals, technical expertise, high cost of facilities, data bias, governmental policies, religious fanaticism, fraud, increment of unemployment, cultural bias, etc. However, it is very interesting to note that so many countries and institutions both insiders (Artificial Intelligence companies) and outsiders (general public) are making dedicated efforts towards mitigating these challenges to their barest minimum. Nevertheless, not corresponding effort is made towards the moral questions surrounding the use and abuse of Artificial Intelligence and robotics.

Notable is the categorization of AI and robotics by Arend Hintze, a professor of computer engineering in Michigan State University. These categorizations are in four types as follows:

- **Reactive Machines**- this refers to Artificial Intelligence and robotics with less memory and is task-specific. This type of machine does simple and specific tasks that do not require complex technicalities.
- **Limited memory**- Artificial Intelligent systems operate by using past experiences to form future decisions. A typical instance of this type of AI is self-driving cars which are

designed to take decisions minding road needs and challenges. Another example of this is the robotics process automation (RPA) which automates repetitive, rule-based data processing tasks traditionally done by humans. This helps in processing heavy data and gaining result faster than human brain. This is used in machine visions-camera, medical image analysis, data computations with fuzzy logic, etc.

- **Theory of mind**-this refers to the psychology of social intelligent behavior of machines to understand emotions; infer human intentions, predict behaviors, etc.
- **Self-awareness**- this is a yet-to-be system of Artificial intelligence and robotics. This is the next stage of technological advancement where machines would have the capacity of self-awareness and consciousness of their own current state.

Morality in Artificial Intelligence and need for Roboethics

Generally, ethics is the branch of philosophy which studies human conduct, moral assessment, concepts of good and evil, right and wrong, justice and injustice, etc as applied in all fields of life and professions. Ethics of Robots (Roboethics) and Artificial Intelligence (hence referred as AI) are branches of technological ethics. It accounts for the moral behaviors of human beings as they design, make, use or operate Artificial intelligence of robotic systems.[7] Ethics of robots is referred as roboethics and its particular concern is that roboticists guarantee that autonomous systems (robots) exhibit ethically acceptable behavior in situation where robots interact with human beings or environment. This is sometimes referred as machine ethics because it is concerned with designing machines as Artificial Moral Agents (AMA).[8]

It was in 1942 that Asimov developed his three ethical laws of robotics to govern Artificial intelligence and robotics in his popular science fiction, "I Robot"[9]. These laws include;

1. A robot must not injure a human being.
2. A robot must obey the orders given by human beings except where such orders would conflict with the first law.
3. A robot must protect its own existence as long as such protection does not conflict with the first or second laws.

Asimov added the fourth law which he referred as the zeroth Law much later;

4. A robot must not only injure a human being but must through inaction not allow a human being to come to harm.[10]

There have been lots of studies to see the possibility of Robotics bearing moral responsibility through the Turning Test[11]. This is an inquiry on the possibility that Robotics or AI could be self-sufficient and able to make their own decisions. There have been questions of not just the capacity of Robotics or AI making their autonomous decision but could such abilities pose possible threat or hazard to human beings and society. However, Asimov acknowledged that these laws are insufficient to anticipate all possible circumstances. Minding the fact that these laws cannot take care of all possible circumstances and cannot bear responsibility beyond the written programs, hence responsibility of robotics and AI goes to its manufacturer or owner/operator.[12] This is because an unconscious element (Robotics and Artificial Intelligence) cannot be a moral agent. Moral responsibility is imputable only to human beings who have consciousness, right of reason and choice of actions.

Furthermore, Jabin developed his eleven clusters of ethical principles upon which AI and robotics must be constructed or coded from the creator companies; transparency, justice and fairness, non-malfeasance, responsibility, privacy, beneficence, freedom, trust, sustainability, dignity, solidarity.[13] The Institute for Electrical and Electronic Engineers (IEEE) developed a standardization policy on AI such that AI creators handover responsibility and transparency to users at confirmation for use. This implies that at the purchase of particular service of AI or robotics, the creator is supposed to detail the user on all possible terms and services and the user confirms these terms. Thus at such confirmation, the user takes over responsibility on Machine language and services.[14]

Roboethics/Artificial Intelligence Moral Questions and the Nigerian Institutions

Moral questions in Robotics and Artificial intelligence may take to numerous initiatives which can be associated to either of these two ethical approaches;

1. What is the expected moral responsibility in the development or creation of AI and Robotics (ethical responsibility of creators of AI and robotics)?
2. What is the expected moral responsibility in the use of AI and Robotics (ethical responsibility of users of AI and robotics)?

These two moral responsibility questions regarding AI and Robotics can simply be summarized as creator and user ethical responsibilities. This concerns the moral or ethical implications required on both the companies that create AI and robotics and the end users or consumers, hence both ought to be guided on right ethical foundations. The third perspective to this ethical concern is referred as the co-ends bias. This is a situation where the user

conspires with the creator to intentionally introduce biased algorithms that will satisfy the end user's selfish purposes.

One of the major ethical concerns of AI and Robotics is both numeric and textual bias. Bias could be from either AI /Robotics creator end or user end or co-ends. It is from creator end when from the company, machine language algorithms are purposefully configured with compromise for selfish reasons while it is from the user end, when users manipulate machine language algorithms for selfish purposes. Similarly, it is said to be co-ends when both the creator and user connive to deceive and shortchange the public and unsuspecting victims by compromising machine language algorithm configurations.

No doubt, Nigerian institutions have enjoyed the benefits of AI and Robotics. This is manifest in;

- financial industries; bank transactions, ATM, loan facility processing,
- Insurance company; beneficiary data analysis and computation
- Education; E-learning facilities, E-classroom, etc[15].
- Communications; phone, computers, mail, social media,
- Politics; BIVAS machine
- Health; diagnosis and cure of strange and difficult diseases.[16]

No doubt AI and robotics are meant to play tremendous roles towards national development in Nigerian institutions. Unfortunately, AI and Robotics systems are vulnerable to biases as introduced by its human creators and/or users.[17] Biased algorithmic systems can perpetuate injustice and discriminatory attitudes by conscious and selfish reasons minding the interest of the creator or user. However, there are lots of ethical questions that jeopardize developmental expectations of AI and robotics. Recently, the worst

hits on ethical compromise among these institutions are the financial, political and security institutions of Nigeria.

It is obvious that politics across the globe is one of the latest industries shaken up by AI and robotics even when its abuse has led to grievous compromise on democracy and electoral process[18]. In India, the use of electronic and robotic voting and the introduction of algorithm bias which manipulates voting process by the ruling party (Bharatiya Janata Party (BJP) raises much ethical question on the integrity of the system. Similarly, the just concluded 2023 general elections in Nigeria is an obvious compromise on the use of Artificial Intelligence. The Bimodal Voters Accreditation System (BIVAS) machine was deployed to uphold the integrity and right of voters. The Electoral Law requires that the results of votes be transmitted on real-time electronically by BIVAS.[18] Before the elections, the BIVAS machines were tested and made obvious that the creators did not introduce bias in the system. Unfortunately, the conspiracy of stalled transmission of results in real-time was claimed to be as a result of technical hitches. However, there were three different elections on the same day; presidential, senatorial and House of Representatives. While the transmission of the senatorial and House of Representatives elections was seamless, the presidential election got stalled. In this case, it becomes very obvious that the bias was introduced by the user end not creator end. Here the user end is the Independent National Electoral Commission (INEC). More so if the Electoral Law prescribes the validity of election results to be premised on real-time transmission of results, then the results would not have be announced since the necessary condition was bridged. More so an inspection of the BIVAS shows that at the time of the election result announcement, not all pooling units results had been uploaded, and some of the presumed uploaded results were mere pictures of either trees or human beings. Thus the big question

seeking answers remain, “from where did INEC get the announced results”?This shows a grievous infringement not only against the electoral law but purposeful alteration of machines for selfish reasons.

In the same vein, the financial industry in Nigeria has enjoyed lots of privileges from the use of Artificial intelligence and robotics. This is manifest in the use of ATM, online banking, loan facility access, bank operation services, customer services both in-bank and online services, etc. The finance industry leverages machine learning algorithms to help mitigate financial risks such as fraud detection, anti-money laundering (AML), cyber security, risk management, compliance, etc.[19] Besides the direct physical bank transaction of commercial and micro-finance banks, there are many parallel bank operations in Nigeria such as O-pay, Paypal, payoneer, cash App, stripe, moneygram, xoom, quickbox, Kuda, FOREX, etc. Unfortunately, the incessant financial crimes in Nigeria trace their origins from unethical use of Artificial intelligence facilities in the financial industry. However, most of the crimes bother on the user end than the creator ends. Some Artificial intelligence experts seek to alter the algorithms with which the machine languages are coded and hack into people financial privacy. It’s quite disheartening given the activities of fraud-stars in the financial industry. Also, more saddening is that some bank employees sale off some piece of information that aid cybercrimes. The criminals seek to steal private information to gain access to victims’ accounts. Sometimes they use crypto currency which is powered by machine language algorithms to move illicit funds across border in unimaginable speed.[20]

No doubt, Robotics and AI have proven to be necessary tools towards security enhancement in Nigeria. Nevertheless, while it is true that AI-infused technology such as computer vision can enhance

public security by identifying crimes in real time with the aid of the CCTV camera; such can also be ethically abused by invading other people's privacy[21]. A typical example of this type of ethical challenge is the experience in some hotels where ICT managers track some personalities with the CCTV in hotel rooms, filming their nakedness and exposing such persons to blackmail and extortion. Similarly, AI and Robotics can be designed as autonomous drones capable of identifying targets and intimidations, hence constituting a great threat to global security.

In the communication industry, AI and robotics have been formidable towards national development in Nigeria. However, some miscreants engage in demeaning practices that raise some moral questions in the communication industry. These abuses include hacking into; private mails, facebook accounts, whatsapp, imo, instagram, etc. When they succeed in this level of crime, they siphon the victim's bank account and sometimes engage in solicitation of fund from the friends of the victim by curling sympathetic stories. Some of these miscreants generate videos, audios and image news using 'deepfake'[22] technologies to blackmail their targets especially celebrities, politicians and other high class personalities for selfish gains. In the film industry, the level of violence expositions and manipulation have logical repercussion in the Nigerian society as children learn violence from the films they watch and even impossible activities in robotic wrestling, football, games, etc.

In the media, AI and robotics have proven to be veritable instruments to the service of humanity and particularly in Nigeria. Robotics and AI have played unparalleled roles in advertising but the psychological manipulations and abuses in the internet and social media have posed great moral questions in Nigeria. In advertising, the moral question is between the interest of companies and ethical values. Some companies that access advertisement of products by AI

and robotics do not really care much about the manipulations and psychological damage to the young minds. Typical example of this situation is the popular cigarette adverts, condom, fashions, beauticians, etc. Here the tension is between freedom/autonomy vs wellbeing as the moral hazards associated with the psychological manipulation can be bastardizing. It is no longer news that the trend of dido, internet pornographic photos and videos created through AI and robotics has become a great challenge to morality especially to the minors. The trauma created in the minds of the juvenile following these advertisements leads to moral devaluations.

Besides numeric bias, textual bias is manifest in the words used in programming robotics and AI. A typical instance of textual bias is the 2018 experience of Amazon who was forced to decommission a Machine Language-powered recruiting engine when it was discovered that it failed to recognize any female related vocabularies, hence shortchanging women from employment and careers.[23] Similarly, in Nigeria, there has been allegations/cases of recruitment portals rejecting some candidates from particular sections of the country. Thus the algorithm of Machine Language is set in such a way that particular words or phrases related to such sections by names, states, regions, etc are set to be rejected by the Machine Language. In some cases, even when the registration is successfully completed by candidates from such already excluded sections by machine bias, their registration is automatically invalidated afterwards yet unknown to the victims. The machine may only select about 0.005% of the registered victims of the textual bias as escaped digits/text. Thus others go home rejoicing that they have made a successful application but nobody invites them for interviews afterwards because their registration has been invalidated.

Conclusion

Artificial Intelligence and robotics have become new brands in the modern society and Nigeria is not left out.[24] This paper recognizes the fact that this fancy has transformed the world beyond technological systems to all other fields of human endeavors. While Artificial Intelligence is the simulation of human intelligence processes, robotics refers to physical machines that apply Artificial Intelligence to substitute human activities for greater accuracy, speed, productivity and industrialization. Experts in this field have been so much concerned about the questions of machine's capacity to think like human beings in human replacement roles.[25] In Nigeria, this wonderful discovery has transformed the world marvelously as manifest in various facets of human existence; medicine[26], politics, military, industries, economy, etc.

Notable is that the world is making conscientious and concerted efforts towards dealing decisively with some common challenges in the progress of Artificial Intelligence and robotics such as; shortage of technical expertise, high cost of facilities, governmental policies, religious fanaticism, increment of unemployment, etc. However, this paper observed an area of concern which has not received a due attention- ethical implications of AI and robotics. Thus this paper sets out to raise some moral questions on use and abuse of AI and robotics both from the creator end and the user end, hence the concept roboethics. The center of this moral concern bothered on two points. First, that Artificial Intelligence developers or roboticists' guarantee that autonomous systems (robots) exhibit ethically acceptable behavior. Secondly, that the users of AI and Robotics apply prudence and ethics in the use. These ethical definitions imply that AI must not cause harm or allow harm to be meted on human beings or environment either by action or inaction[27]. Also, both the creators and the users must not conspire to

introduce bias in machine language algorithms but maintain transparency, justice and fairness, non-maleficence, responsibility, privacy, beneficence, freedom, trust, sustainability, dignity, solidarity.[28]

Unfortunately, in Nigeria there has been grievous moral compromise emanating from data and textual bias on use of Artificial Intelligence and robotics. This situation has been identified as follows; bank crimes and money laundering (also in other online parallel bank such as; O-pay, Paypal, payoneer, cash App, stripe, moneygram, xoom, quickbox, Kuda, FOREX), electoral malpractice through the Bimodal Voters Accreditation System (BIVAS) machine, CCTV[29] camera blackmail and extortions, account hacking in facebook, whatassp, imo, instagram, "deepfake" videos and audios, moral compromise in advertisement industries' obscene videos and audiosof dildo, pornography, machine language textual bias and discriminations[30].

As this paper discourages moral compromise applicable in Artificial Intelligence and Robotics, it calls for more attention and consciousness of the society to this menace. Also, this paper calls the attention of professionals in this field to deepen studies on better ethical practices of Artificial Intelligence and Robotics. Most importantly, this paper makes a clarion call on the judiciary to enact and implement comprehensive laws against such abuses. This will discourage cybercrimes, discriminations and ensure data privacy protection to avoid nefarious abuse of AI and robotics, hence making the use of AI and robotics safer and more friendly.

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