

Strategic Interests and Transnational Crimes

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The Role of Artificial Intelligence (AI) in Supporting Kenya's Covid-19 Vaccine Program

As severe pressure continues to mount on Kenya's Covid-19 vaccination program, our Strategic Interests and Transnational Crimes Research Fellow, Ida Gathoni, discusses the support role artificial intelligence technology can play. Read it in our today's **Gloceps Daily Influential Brief**. (**Dr. K.O. Asembo - Editor-In-Chief**)

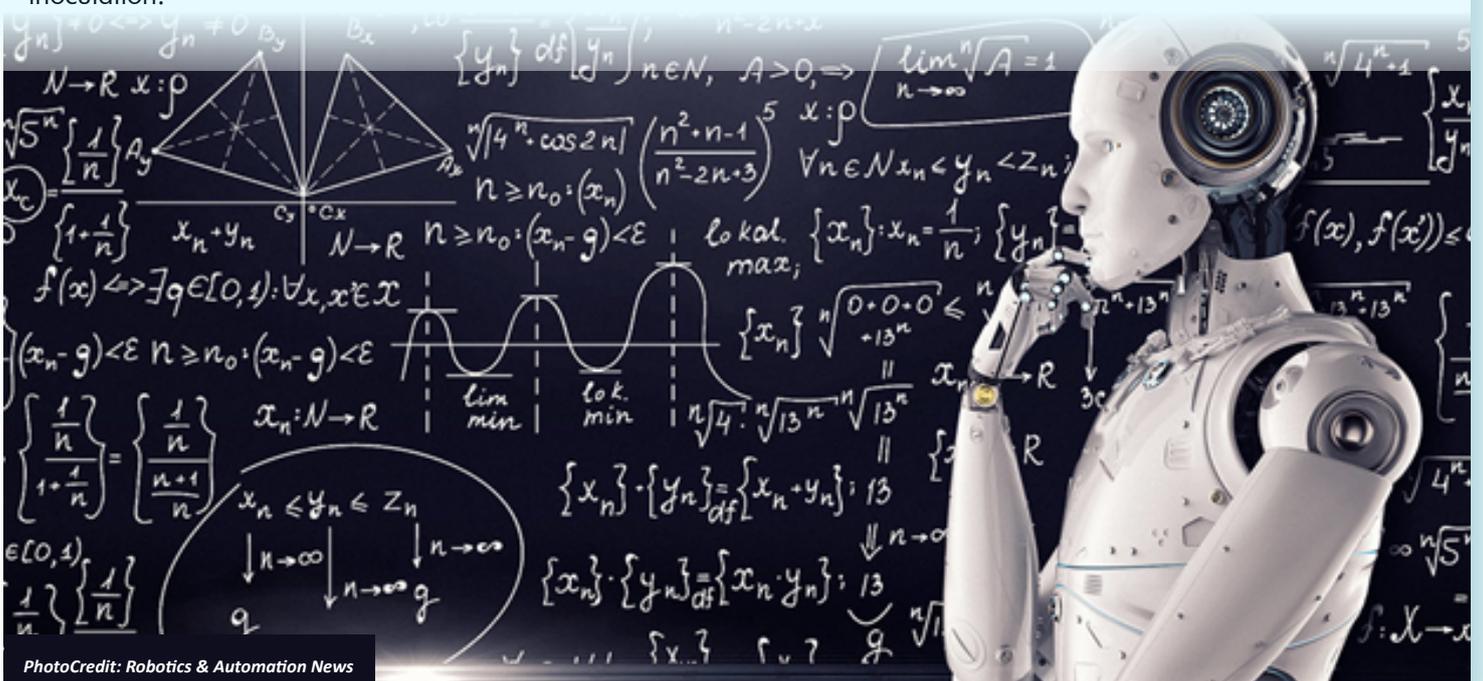
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Abstract

The Kenya Covid-19 Vaccination program could benefit from use of Artificial Intelligence (AI) in management of target populations, post-vaccine surveillance, information and vaccine security and supply chain process from manufacturing to actual inoculation.

AI possesses the ability to absorb data, recognize patterns, and duplicate or alter them with better accuracy than human experts. This has revolutionized many fields of science and engineering. It can therefore be harnessed to support the manage-

ment of the COVID-19 and advance early warning systems. This can be achieved by extracting and analyzing statistics from social media platforms, calls and news sites to streamline the vaccination process.



PhotoCredit: Robotics & Automation News

Introduction

The processes of distribution and supply of Covid-19 vaccine has been riddled with logistical problems worldwide as systems to ensure efficient administration evolve. Ineffective management along the distribution chain not only affects the availability and quantity of the vaccine, but also costs countries fortunes.

AI presents opportunity in the administration process. Within a defined set of rules, AI can absorb data, recognize patterns, and duplicate or alter them. Within the shortest time possible, machines can automate more complex tasks autonomously with better accuracy than human experts. This has been instrumental particularly in COVID-19 diagnosis and vaccine discovery process and can be useful outside the lab in the distribution process.

Kenya has previously made use of Medical Artificial Intelligence (MAI) in areas such as cancer research and diagnosis as well as ground-breaking surgeries. The country has

shown willingness to embrace use of AI in management of Covid-19. In January 2021, Kenya received robots donated by the United Nations Development Program (UNDP) in partnership with Japan to assist medical workers in various Covid-related functions.

The robots are also programmed to collect patient information, analyze the data and deliver immediate statistics for analysis. There exists a Blockchain & Artificial Intelligence taskforce established in 2018 to provide the government with recommendations on how to harness these emerging technologies over the next five years.

As Kenya begins to roll out the vaccine, various elements of the program could benefit from application of AI in their processes.



Photo credit: Aljazeera

Key Issues

The following issues are key in relation to the role AI can play in administration of the vaccination programme in Kenya.

Management of Target Populations

Kenya's Covid-19 vaccination is likely to face key challenges related to verification while ensuring that the vaccine gets to the targeted individuals as planned in the rollout strategy. The first phase targets healthcare and frontline workers, including security personnel and teachers.

However, anyone willing to get the vaccine can still get it whether or not they are within the target group. The Vaccination Programme is making use of a platform developed by the Ministry of Information, Communications and Telecommunication (ICT), which has the capability to do pre-registration and send the user details to the recipient and also a reminder as to when one should get a follow-up dose.

To ensure that the vaccine gets to the intended population, the system could be merged with Kenya's pre-existing databases at the National Data Centre and those with the medical, security agencies and Teachers' Service Commission. Most of these records have already been captured through Huduma Number registration process.

Developed countries such as Australia have adopted systems where individuals register online for vaccination, after which an algorithm selects those who are viable, and schedules a vaccination appointment. With the same online application, one can log in any adverse reactions. Kenya's platform can benefit from a similar system integration to ensure a more seamless vaccination process



Photo credit: InfoNETGlobal

Supply Chain Management

There is need for the Kenya vaccination programme to ensure effective shipment of vaccines to the recipients so that a good number of people are inoculated at the same time. Efficiency in the distribution of the Covid vaccine remains imperative since global demand is likely to outstrip supply with severe margins.

Over 70% of people in Kenya live in rural communities which are not connected to the internet and without proper access to health care services. Making use of AI through geospatial satellite to collect population data is essential. This will ensure that the vaccine is strictly supplied according to population size with no deficiency or wastage. AI can be harnessed to capture real-time data on the recipients, for instance, by use of heat map.

These can be used to monitor populations and collect user-generated information across multiple geographic locations. The technology will avail sufficient data for analysis and ensure efficient vaccine distribution.

Post-Vaccination Surveillance

Given the sensitivity associated with the Covid vaccine, there is need to ensure security and monitor the information associated with its efficacy, production and delivery networks. The vaccine has been referred in several spheres as liquid gold. It therefore raises a myriad of security issues in the transfer points of the supply chain. Potential associated risks are theft, sabotage and counterfeiting.

AI would be essential for monitoring the supply chain at each of the various stages. This can be through Blockchain creation and the development and fixing of tracking technology that moves with the vaccine up to the point of inoculation. For instance, use of coded seals that reflect on a database once they are broken, showing the location of the place the seal has been broken. This would be essential in prevention and dissuasion of organized criminal groups from penetrating the Covid-19 vaccine market.

With regards to curbing disinformation regarding the vaccine, AI can be used to identify trends particularly on social media and provide information about the origin of false information and as a result help dissuade disinformation. When the pandemic began, there was an array of conflicting information as to the spread and control of the virus.

Majority of the propaganda was largely spread on social media causing confusion in various circles. The vaccine has also come with its share of disinformation regarding its side effects, among them, blood clots and infertility. AI can be used to identify and counter such propaganda.

The downside of AI technology is that its use is only limited to the segment of population that who can afford and use internet/ mobile data. In the Kenyan set up, data will be skewed especially when the vaccine roll out goes to the rural areas. For this reason, radio remains the most reliable and affordable medium of accessing and sharing information in those areas. But AI can still be used in radio monitoring technology to extract transcripts containing COVID-19 keywords and analyze them for monitoring the health emergency information being passed on to rural communities.

More so, the use of AI driven chatbots that can constantly and consistently engage the public and help in disseminating genuine, credible information regarding the virus and vaccine plans. This will help clear the confusion regarding the Ministry of Health protocols particularly the contents of the vaccine plan, who gets it, when and where.



Photo Credit: Logistics Update Africa

Photo Credit: Relief web



Photo Credit: Taalamu News

Conclusion

AI presents an opportunity for use of information technology analytics in the accurate and efficient management of the Covid-19.

It is capable of helping the government avoid wastage in the vaccine distribution process so as to achieve maximum utilization of the scarce resources available in managing the pandemic situation in the country.

Recommendations

- Kenya Ministry of Health should task the Blockchain and Artificial Intelligence taskforce with AI centered monitoring and evaluation of the Covid vaccine awareness, procurement and distribution.
- The Ministry of Health and Ministry of ICT and Kenya National Data Centre to develop online applications and other relevant technology usable and accessible to all Kenyans for pre and post vaccine management programs.

Ms Ida Gathoni is the Centre's Research Fellow for Strategic Interests and Transnational Crimes. She has been engaged in research undertakings related to cooperation and conflicts over natural resources in the arid and semi-arid lands. She holds a Master's degree in International Relations (Conflict Resolution and Development Studies) and a BA degree in International Business Administration (Finance) from the United States University-Africa (USIU-A). She also holds a BA (hons) degree in Psychology from the University of Nairobi.



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