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Challenges and Opportunities of Using Artificial Intelligence in Humanitarian Actions

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Letter to the Editor

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Dear Editor,

The use of artificial intelligence (AI) in humanitarian activities marks a significant digital transformation, enhancing operational methods in areas such as disaster risk reduction, crisis response, and resource allocation. Although the use of digital technologies is not new, recent advancements have facilitated broader applications, particularly highlighted during the COVID-19 pandemic when digital technologies accelerated humanitarian operations. (1)

AI can transform humanitarian services (2) by analyzing data to predict crises, moving the approach from "reactive actions" to "predictive solutions." However, there are concerns about the risks of AI, including "humanitarian surveillance," excessive reliance on "technological solutionism," and issues of "technological colonialism." The goal is to maximize the benefits of AI while minimizing its risks in humanitarian actions. AI can significantly bolster humanitarian efforts, focusing on three dimensions: a) preparedness (understanding risks and proposing actions), b) response (delivering assistance to those in need), and c) action (extending beyond immediate aid). (3)

AI technologies can analyze large data volumes, providing critical insights into potential risks for vulnerable populations and informing proactive humanitarian responses. For instance, the International Federation of Red Cross and Red Crescent Societies operates a predictive financing program that utilizes weather data and market analyses to allocate humanitarian resources for timely interventions. (3) Additionally, the World Food Programme has developed predictive models to forecast food insecurity in war-affected areas and maps malnutrition prevalence among different populations.

The question is whether the deployment of AI systems, particularly predictive analytical models, can enhance preparedness in humanitarian actions. This subject requires careful examination. On one hand, AI systems can be beneficial in humanitarian efforts due to their ability to better understand situations and provide more accurate predictions. On the other hand, relying solely on the analysis of historical data may not provide a sufficient basis for planning future actions. Models based on past data analysis may overlook changes in human behavior and environmental conditions, leading to inaccurate predictions. For instance, during the COVID-19 outbreak, many AI models failed to support medical decision-making effectively. (4)

This failure is linked to the poor quality of historical data and the risks of bias within it. Additionally, an overemphasis on outdated data can perpetuate existing inequalities and historical inaccuracies. Therefore, it is essential to examine the humanitarian characteristics in which these systems should be implemented to avoid "technological solutionism" and unnecessary use of technologies. Research indicates that focusing on "big data" to predict the outbreak of the Ebola virus was not as effective as investing in public health measures. (5)

AI systems can effectively support humanitarian responses during crises. Deep learning and natural language processing technologies enable rapid classification of social

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media messages, assisting in identifying areas in in need of immediate assistance. (6)

For instance, the "Emergency Situation Awareness" platform in Australia and New Zealand monitors natural disaster information from Twitter. Additionally, AI can analyze damaging images from social media to enhance disaster management. Rapid mapping services also use satellite imagery to provide accurate information about affected areas. However, these technologies do not always lead to a fixed and universal response. AI can be particularly effective in humanitarian actions during long-term crises. This technology facilitates communication between "humanitarian populations" and "affected communities." For example, the ICRC's "Face Tracking" platform is designed to help refugees locate missing family members. (7)

However, the effectiveness of AI depends on how it is used and may pose risks such as exacerbating disproportionate surveillance or algorithmic inequalities for affected populations. The use of AI in humanitarian actions can yield valuable outcomes, but it is not without risks. Three key factors are crucial in this context; a) data quality, b) algorithmic bias, and c) data privacy compliance. These components play an essential role in ensuring the effectiveness and security of AI systems. Concerns about the quality of training data for AI algorithms are particularly significant in humanitarian efforts. Inadequate data can lead to poor outcomes and harm individuals in crisis situations. Collecting high-quality data in remote areas is challenging, and overlapping data collected by different individuals can increase errors. Monitoring these mistakes and preventing "algorithmic bias" is also important to avert negative social consequences.

The issue of "algorithmic bias" in AI systems is closely linked to data quality. This bias involves human perspectives and prejudices that can lead to unfair and discriminatory outcomes. (8)

AI systems may reflect the biases of their designers, exacerbating both direct and indirect discrimination. According to human rights laws, any form of discrimination based on factors such as race and gender is prohibited. Bias in systems can amplify inequalities, especially as structural and historical issues against minorities may be reflected in training datasets. For example, facial recognition algorithms tend to show lower accuracy in identifying women with darker skin tones due to a lack of diversity in the training dataset and can lead to their exclusion from humanitarian aid, especially if identification is a prerequisite for access. Therefore, it is essential to take measures to prevent these systems from becoming a tool for excluding people in need.

Human rights documents encompass the right to privacy within AI systems, and regulations such as data protection and personal information processing mandate legality and transparency in humanitarian settings. Maintaining ethical standards in the deployment of AI is vital to ensure that humanitarian actions are just, equitable, and truly beneficial for all individuals, regardless of their background. However, in these contexts, genuine consent from individuals may not be obtained, and refusal to consent can lead to denial of assistance. Additionally, language barriers and administrative complexities exacerbate these challenges. Criticisms of "humanitarian surveillance" also indicate that data collection can increase the vulnerability of those in need. Therefore, developing guidelines for the use of AI in the humanitarian sector is essential to ensure that technology benefits those in need and does not cause them harm.

AI offers new opportunities to enhance humanitarian efforts, but it also presents significant challenges. Emphasizing the principle of "do no harm" is crucial when using AI in humanitarian actions. Humanitarian workers must recognize the potential harmful impacts of these technologies and ensure their activities do not negatively affect target populations. This principle, rooted in bioethics (9), is increasingly referenced in discussions of technology and AI ethics. To implement this principle, risk analysis to identify potential risks to humanitarian action and provide strategies to mitigate them, as well as impact assessment to identify the negative effects of programs and methods to prevent harm to target populations, are useful tools. These approaches are particularly useful for humanitarian organizations using AI technologies. Sometimes organizations may conclude that the use of technology in particular cases is not appropriate because of the potential harms that outweigh the benefits.

Ultimately, balancing the innovative potential of AI with ethical considerations is critical to ensuring that humanitarian efforts are responsible, equitable, and effective. Humanitarian actors should not rely excessively on AI technologies, especially in cases such as facial recognition, where accuracy may be inadequate. (10)

It should also be noted that data collection and storage should be considered from a cybersecurity

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perspective, and personal data should be deleted after the work is completed and used only for the specific purposes for which it was originally collected. “Data Protection Impact Assessments” help humanitarian actors better understand the potential negative impact of AI technologies. Required organizations should conduct these assessments before processing data. In the humanitarian field, "anonymization" of data is not enough to prevent the re-identification of vulnerable populations, and insecure data storage can create further risks for these groups.

Humanitarian actors should establish a comprehensive framework to ensure “accountability”– a mechanism that includes a commitment to explain and justify actions– and “transparency”– providing clear information about the use of AI systems, the type of data collected and their purposes in using AI. For example, to verify the biometric identity of migrants, they should be informed about what data is being collected, how it is being collected and who has access to it. (11)

In humanitarian action, especially when using AI, accountability must be embedded in the relationship between actors and stakeholders, as this is essential given the potential risks these technologies pose to human rights. For example, humanitarian actors should inform stakeholders of data breaches and report on corrective actions. The response of the International Committee of the Red Cross to data breaches is an example of a commitment to transparency and accountability. Establishing such a framework not only maintains the trust of vulnerable populations, but also strengthens accountability in the use of new technologies.

The conclusion is that data-driven AI technologies are transforming the humanitarian field and can significantly support humanitarian actors. AI helps humanitarian operations across the three main dimensions of preparedness, response and action, by shifting the focus from reactive to predictive. However, the use of AI is not without risks, and three main areas of concern are data quality, algorithmic bias and privacy. These concerns have significant implications, particularly for vulnerable populations. To avoid violations of humanitarian rights, technologies must be implemented in a way that is consistent with humanitarian requirements. Risk analysis and impact assessment can help to implement the “do no harm” principle and mitigate risks.

AI systems are not inherently neutral and their unsupervised use can create new risks. It should be noted that there is no single solution for all contexts and each system must be assessed in its specific circumstances. Finally, establishing transparency and accountability frameworks for the responsible and effective use of AI in humanitarian action is essential and will help optimize the potential of AI in this area.

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