

## INSIGHTS ON ARTIFICIAL INTELLIGENCE IN THE DEVELOPING WORLD

Matthew Smith, senior program specialist at the International Development Research Centre, talks with Charting Change about the opportunities and challenges of AI in transforming societies



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Artificial intelligence is transforming societies worldwide. In developing countries, AI's potential to benefit local economies, health-care, agriculture, education and other sectors is sparking optimism and investment. Yet the challenges are great. Charting Change asked Matthew Smith, senior program specialist at the International Development Research Centre and lead author of the 2018 IDRC whitepaper [Artificial intelligence and human development](#).

**CHARTING CHANGE:** *Your whitepaper cites AI's enormous potential, but it also warns that "if we continue blindly forward, we should expect to see increased inequality alongside economic disruption, social unrest ... with the technologically disadvantaged and underrepresented faring the worst." Why frame it this way?*

**MATTHEW SMITH:** It's really a call for developing a deeper understanding of these systems and how they interact with human rights. And also, fundamentally, a call

Stakeholders from across Africa, including T. Idriss Tinto (foreground) of Burkina Faso, gathered in Nairobi, Kenya, in April 2019 for a three-day workshop aiming to strengthen the work of artificial intelligence researchers and policy makers. Experts believe AI can help transform societies in developing nations.

for building the capacity of people working in developing country contexts, the global South, to be able to design and build and develop these technologies themselves and also to participate in the global discourse around them.

**CC:** *You state those countries need to have effective AI policy and regulatory structures in place to ensure people benefit and their rights and privacy are protected. Where do things stand today?*

**MS:** I don't think we're that far. There's been a lot of work in Western countries. And a lot of the UN agencies or human rights agencies have done a lot of interesting thinking about the intersections between AI, say, and how it might interplay with human rights; how do you design an

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AI system in an ethical way; or what are the principles for responsible and ethical design of AI? But in terms of how it is in the development space, from a research perspective, I don't see a lot of it.

**CC:** *Last fall, IDRC helped to fund an AI research network in sub-Saharan Africa. Is that the sort of step that's needed?*

**MS:** Yes, that's still being developed. There was a meeting on it in April in Kenya. The idea of bringing everyone together was to try to figure out **what an African research and innovation agenda would look like**. There was also a **call for proposals for innovations** to advance sustainable development, with winners and funding announced in August.

**CC:** *What makes AI different than other technologies?*

**MS:** It changes the way we can think about working, it changes the way we can organize. And it can do it massively and very cheaply.

**CC:** *Where do you see AI having the most potential benefit in developing countries?*

**MS:** It depends on what level you look at. The things that you probably hear about most are in agriculture. But if you look at prediction models for weather pattern changes or where areas will get flooded, they are not local innovations. From a local perspective, an area that I am personally inter-

ested in is education. I was at a workshop thinking about training teachers at scale. There are all sorts of interesting ways that you can introduce AI to help. One idea was to create a little AI coach on Facebook Messenger. It would check in periodically with teachers who are progressing to a different training module, saying, 'Ok, how are things going, do you need any help with anything?'

**CC:** *Is that easily scalable?*

**MS:** It's a package deal. The Facebooks of the world can assemble these things, put them out there and they make the barriers to development of AI and to developing something new quite low. In this case, teachers just need a cellphone and Facebook Messenger. And when that starts happening, then you get all sorts of really interesting experiments by people who are just trying to solve a local problem.

**CC:** *Disease detection is another area that is often highlighted?*

**MS:** In situations where you need some level of expertise, but you don't have that expertise — say, rural areas or areas where they just don't have enough doctors — AI systems are pretty sophisticated in doing diagnostics. It's a kind of prediction problem: 'What are your symptoms and what do you think it's going to be?' If you can get a fairly robust system to front-line health workers with mobile phones, they'll be able to do an incredibly high level of diagnostics.

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## READING AS THINKING

1. Describe one advantage and one disadvantage of the use of artificial intelligence (AI) to assist with societal functions in developing countries.

a. Advantage: \_\_\_\_\_

\_\_\_\_\_

b. Disadvantage: \_\_\_\_\_

\_\_\_\_\_

2. Give an example of an ethical AI policy that you think should be implemented in order to protect the rights of people living in societies where AI is used.

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3. How would you answer the question: what makes AI different than other technologies?

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4. In the article, Matthew Smith mentions the use of an AI coach on Facebook Messenger to help teachers incorporate AI in their classrooms. Why do you think Smith favours this strategy? Do you see any problems that could be associated with this method, particularly in developing countries? If yes, please list them.

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5. Can you think of another method of teaching people in developing countries how to use AI that could potentially be more effective than an online AI coach? Describe it here.

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6. How did your opinion of technology and AI change after reading this article? Do you think technology and AI can serve humanity in a positive way, or do you think we need to be cautious about pursuing these research avenues? Is it a combination of both? Elaborate on your thoughts.

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## Think-Pair-Share

### Think

AI can be described as follows: a machine capable of mimicking the ways in which the human brain functions and allows human beings to interact with their surroundings (e.g., through decision making, problem solving, learning new skills, communicating and understanding patterns and trends).

There are many ways that we use AI in our everyday lives, including smartphones, drones, cars, social media, music streaming, and travel and navigation. Write a list of three other objects/activities that you think may be associated with AI.

### Pair

Compare your list with a partner's ideas. Check how many objects/activities your lists have in common. In teams, research whether or not the items on your list are associated with AI in some way. Take the time to understand how AI is used in association with these objects/activities and learn more about how AI works.

Next, pick an object/activity that is not associated with AI. Work with your partner to brainstorm a creative way that AI could improve that object/activity, make your life better or more efficient or improve the life of someone living in a developing country. For example, have you ever had to fold your socks? Sometimes, matching each sock to its pair can be difficult, especially if they all look similar. What if an AI that worked with the camera on your smartphone could take a picture of your pile of socks and immediately tell you which sock matches which? Poof, folding laundry made easy!

### Share

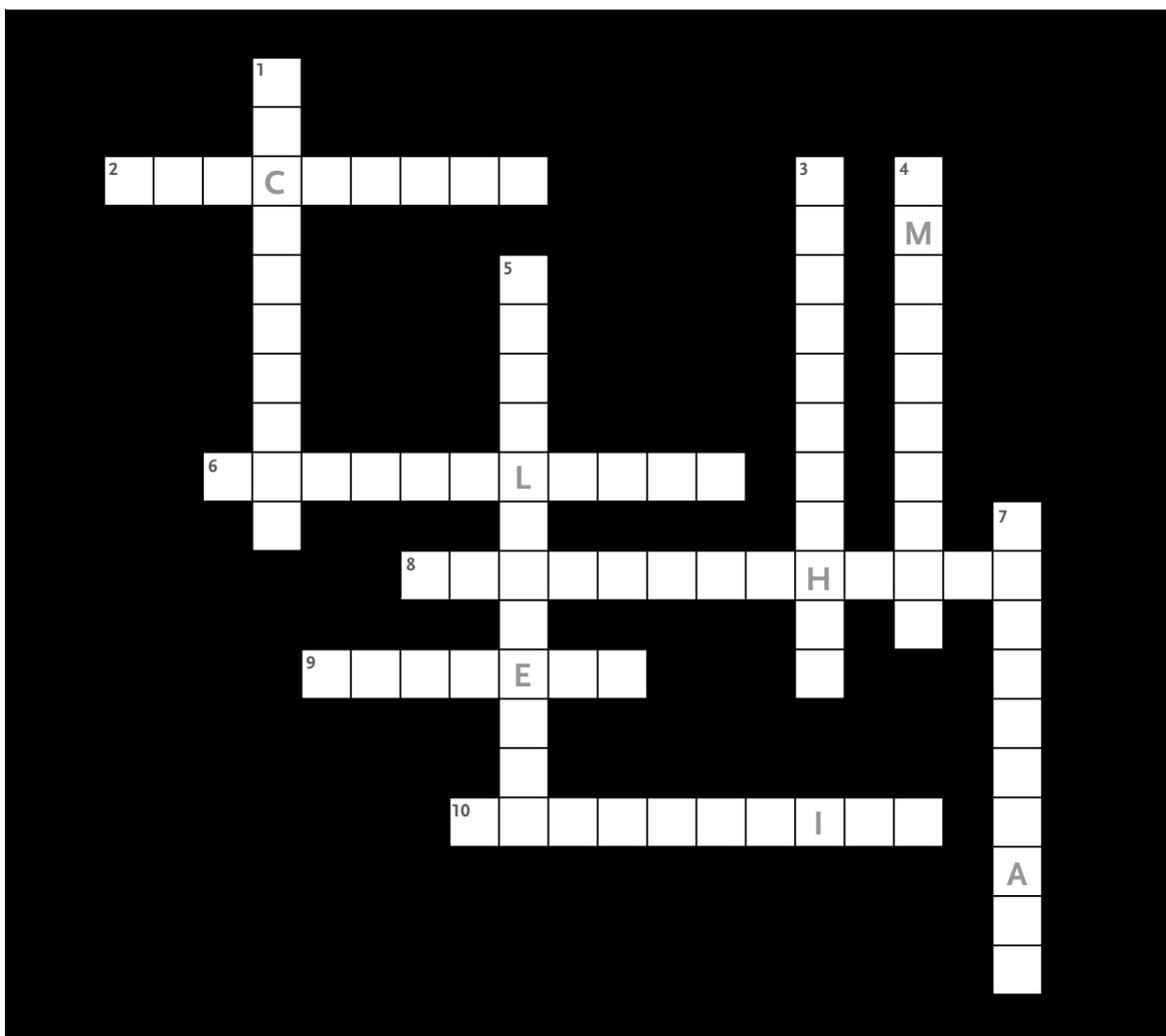
As a class, take turns sharing your ideas. Discuss which idea would be the easiest to design and implement and which one would be the costliest. Discuss how you would market these ideas and who your target audience would be. If time allows, illustrate your design concept with your partner using arts and crafts supplies or a digital editing software. As a class, create a gallery of design ideas on a wall in the classroom or hallway so that other students in your school can learn about your ideas.

## ONLINE

- [What is artificial intelligence?](#)
- [Machine learning for kids](#)
- **Quick Draw:** the game that uses crowd-sourced drawing to train an AI
- **AutoDraw:** the game that converts your scribbles into easily-identifiable drawings
- **AI Duet:** a piano that plays a duet based on the notes you play
- **Bird Sounds:** thousands of bird songs represented visually

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## CROSSWORD:

### Across

2. The process of receiving or giving instruction, especially at a school or university
6. The practice of farming
8. Occurs when changes in Earth's climate system result in new, long-term weather patterns (two words)
9. A group of people living together in a more or less ordered community
10. A word used to describe a country that is seeking to become more advanced economically and socially

### Down

1. Machinery and equipment developed from the application of scientific knowledge to benefit society
3. Something you are entitled to that includes freedom of opinion and expression, and access to work and education (two words)
4. A handheld device that in most cases has Internet access, and an operating system capable of running downloaded applications
5. The ability to learn and understand facts, information and knowledge
7. Medical care provided to individuals or a community by a government