# Alternative visions for the future of AI

## Creating artificial intelligence that works for everyone requires better evidence and a healthy dose of imagination

In the final days of December 2019, the Canadian artificial intelligence (AI) company Blue Dot was one of the first to issue an alert about the emerging threat of COVID-19. It was and continues to be one of a whole host of AI systems that are helping to find signals in the noise of vast amounts of unstructured, diffuse big data.

When it comes to disease outbreak, timing is critical but it's not everything. In the weeks and months that followed, these early warnings needed to be interpreted by networks of experts in policy, infectious disease and by medical practitioners and citizens. Only by combining this distributed human intelligence with the initial signal surfaced by AI could we begin to coordinate and plan the emergency response.

## What is AI?

COVID-19 has helped to shine a light on both the added value and limits of what artificial intelligence (AI) is currently capable of. Techniques like data mining and

machine learning, with their ability to trawl through and spot patterns in vast amounts of data, are advancing the search for treatments and vaccines, while simulations and modeling are helping us to anticipate the impact of policy interventions on the spread of disease. For all the hype around AI, it hasn't offered a magic COVID-19 solution. Those at the forefront of dealing with the crisis are interconnected networks of people, in some cases supported by AI. Teams of doctors and nurses in hospitals delivering care, community groups supporting each other with deliveries of essential supplies, and citizen scientists helping us to map the range of symptoms experienced by those outside of hospital are just some examples.

We have also seen AI failing to adapt to "the new normal", with fraud detection and recommendation systems struggling to understand the changes in human behaviour brought on by COVID-19. In spite of AI being seen as the disruptor of pretty much everything, the most popular AI methods are often limited by their reliance on big datasets and a lack of interpretability. Most of the problems that really matter to people are too complex to fall within these constraints.

All of this prevents us from directing AI towards problems that could generate the most social impact and distribute benefits more widely - what we call **public interest AI**. The choices we make now about how AI is steered and directed will shape the lives of future generations. As a result it requires action at multiple levels to avoid us

making incremental improvements inside a broken system.

At Nesta, we're calling for more imagination and experimentation when it comes to preparing for an AI-enabled future. We want to build a coalition with others who support our vision.

**The following four actions are vital for achieving a public interest AI and our work puts these into practice.**

## 1. Build a stronger evidence base about the current state of AI

As AI research and adoption continues to change at breakneck speed, our understanding of who is doing what and what impact different activities might have is incomplete. We also lack clarity around where the greatest opportunities and risks lie. Understanding where the field is headed and how we can steer its trajectory in a way that benefits society, avoiding hard-coding biases and inequality, requires better intelligence about artificial intelligence.

Nesta uses data mining, network science and machine learning to track the trajectories of AI development and use. Mapping these trends in real time helps us to better understand the impact of AI, both positive and negative. Our report, which part of our research agenda on better

intelligence about AI, looks at how AI research has adapted to COVID-19. Our analysis suggests that AI is underused in the mission against COVID-19. When it has been applied, researchers cite less from other disciplines, increasing the risk that they may reinvent the wheel or ignore the complex social contexts in which their technologies might be deployed.

Other work to build a stronger evidence base includes our recent essay collection on the use of AI in China's public services which highlights the importance of adopting a global outlook when looking to understand trends in AI. Similarly, our research on the next generation internet explores the competing forces that are shaping the future of the internet and AI.

As AI becomes a part of our everyday lives, it will increasingly impact how we work and learn in the future. Some of the ways we have looked to understand these changes include our research into the future of AI in schools and colleges in the UK, while our Open Jobs programme uses novel approaches to analyse labour market data to understand the true impact of automation on our jobs and the future of skills.

## 2. Direct resources to where they can generate the most social impact

AI remains one of the most well-funded areas for technology research and development. However, the

market is dominated by commercial and military applications, with relatively little support for AI based solutions to solve some of our biggest societal challenges, despite investment worth billions. For example, very little AI research is being focused on sectors where automation may bring the most disruption, even though that disruption could have a negative impact on millions of people's lives. In the mission against COVID-19 most AI research has focussed predominantly on fine-tuning existing applications rather than thinking more strategically about how to deploy AI to achieve the most impact in tackling the pandemic.

As a funder we are seeking to lead by example in this area and have launched funding programmes with social impact criteria, such as our recent AI for Good fund in Scotland and the Collective Intelligence Grants which supports cutting-edge experiments on how we can use AI to enable groups of people to solve social challenges together. We've also backed AI innovation in education and healthcare through our impact investments.

## 3. Use AI to enable groups of people to think and act smarter together

One of the biggest gaps in our understanding of AI is around how it relates to our collective human intelligence. Most applications of AI have focused on replicating human capabilities through a narrow set of tasks which either "replace" or make individual humans more efficient

when performing a task. However, much less focus has been given to how we use AI to enable groups of people to think and act smarter together, or how to best combine human and machine intelligence to address complex problems. Despite advances in digital technologies that connect more of us together than ever before, we're still a long way from making the most of collective efforts - but AI can help.

For example, AI can be used to streamline how tasks, skills and information are distributed within teams or to simulate the complexity of the world to help us develop shared mental models during decision making. This requires much more imagination in the ways we think about the value of AI or prioritise funding. This week, we will publish findings from our first cohort of grantees whose experiments take us closer to understanding how to optimise for the complementary strengths of people and machines.

Through the Centre for Collective Intelligence Design we are building a community of practice to experiment with these ideas and explore alternative future visions for AI. Our research on the Future of Minds and Machines looks at how artificial intelligence can enhance collective intelligence as well as how participatory methods can introduce principles of diversity and collective value into the development of AI. These 20 case studies show glimpses of the opportunity if we get this relationship right.

## 4. Involving a broader range of people and voices in shaping AI

AI can reflect injustices that exist in our society. The data that power the algorithms behind AI can reinforce biases and outmoded practices. As such, the deployment of certain AI applications have forced us to confront issues of systemic inequality and examine the values we hold as a society. As the recent debate around facial recognition has shown, collective action can help shape how big companies and developers think about using AI.

To ensure a fairer and more representative AI, we need to see power redistributed and more opportunities for a much wider range of people and voices to shape and direct the future of AI and how it impacts the way we live. This challenge is illustrated by our research on the lack of gender diversity in AI, which finds that less than 14% of all AI research is done by women.

One of the ways we can ensure greater representation is through Participatory Futures; tools and methods that help people developing services and products for the future think about how to be more inclusive and diverse in the process. Another way we've sought to help is through the Longitude Explorer Prize that aims to encourage young people to experiment with and shape AI systems, by inviting 11-16 year olds to submit their ideas for AI-enabled solutions that improve the lives of others.

The pace and disruption caused by AI requires a new approach to policy and regulation. We are actively working with regulators and governments to promote a more anticipatory and inclusive approach to regulation, for example through the Legal Access Challenge.

## Paving the way for better AI futures

The global health crisis has tested the limits of our current systems and highlighted the vital importance of collective action for preparation, innovation and decision making during emergencies.

Now is the time to pause and take stock of the futures that current AI trajectories are locking us into and work towards an alternative vision. By doing this, we will be in a better position to deal with the next global emergency whether it's related to health, the economy or the climate crisis. This will require building a robust evidence base whilst experimenting with how we can direct AI towards helping us think and act smarter together and spread the opportunities and benefits opened up across society. It will also require a healthy dose of imagination - we need to start telling different stories about AI futures.

Much of this is uncharted territory and there are no clear right answers. We're experimenting, whether it is with trying new data science methods or with funding grants that bring together AI and CI in novel ways and so we're likely to have some failures along the way. The ambition

and scope of this work, as well as the pervasiveness of AI across many sectors and different types of expertise means that we need allies who will work with us to achieve this vision.

If more of our AI systems were built with better oversight and directed towards problems that matter to people, like coordinating resources for social care or reducing socioeconomic inequality, we might have been able to adapt more quickly and mitigate the disparate impacts of COVID-19.

**To find out more, follow our Spotlight Week focused on artificial intelligence via Nesta's Twitter and sign up to our live Q/A event.**