Use of AI to fight COVID-19 risks harming 'disadvantaged groups', experts warn

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Hagerty, researchers highlight potential consequences arising from the AI now making clinical choices at scale—predicting deterioration rates of patients who might need ventilation, for example—if it does so based on biased data.

Datasets used to "train" and refine machine-learning algorithms are inevitably skewed against groups that access health services less frequently, such as minority ethnic communities and those of "lower socioeconomic status".

"COVID-19 has already had a disproportionate impact on vulnerable communities. We know these systems can discriminate, and any algorithmic bias in treating the disease could land a further brutal punch," Hagerty said.

In December, protests ensued when Stanford Medical Centre's algorithm prioritized home-workers for vaccination over those on the COVID wards. "Algorithms are now used at a local, national and global scale to define vaccine allocation. In many cases, AI plays a central role in determining who is best placed to survive the pandemic," said Hagerty.

"In a health crisis of this magnitude, the stakes for fairness and equity are extremely high."

Along with colleagues, Hagerty highlights the well-established "discrimination creep" found in AI that uses "natural language processing" technology to pick up symptom profiles from medical records—reflecting and exacerbating biases against minorities already in the case notes.

They point out that some hospitals already use these technologies to extract diagnostic information from a range of records, and some are now using this AI to identify symptoms of COVID-19 infection.

Similarly, the use of track-and-trace apps creates the potential for biased datasets. The researchers...
write that, in the UK, over 20% of those aged over
15 lack essential digital skills, and up to 10% of
some population "sub-groups" don't own
smartphones.

"Whether originating from medical records or
everyday technologies, biased datasets applied in a
one-size-fits-all manner to tackle COVID-19 could
prove harmful for those already disadvantaged," said Hagerty.

In the BMJ articles, the researchers point to
examples such as the fact that a lack of data on
skin colour makes it almost impossible for AI
models to produce accurate large-scale
computation of blood-oxygen levels. Or how an
algorithmic tool used by the US prison system to
calibrate reoffending—and proven to be racially
biased—has been repurposed to manage its
COVID-19 infection risk.

The Leverhulme Centre for the Future of
Intelligence recently launched the UK's first
Master's course for ethics in AI. For Cave and
colleagues, machine learning in the COVID era
should be viewed through the prism of biomedical
ethics—in particular the "four pillars".

The first is beneficence. "Use of AI is intended to
save lives, but that should not be used as a blanket
justification to set otherwise unwelcome
precedents, such as widespread use of facial
recognition software," said Cave.

In India, biometric identity programs can be linked
to vaccination distribution, raising concerns for data
privacy and security. Other vaccine allocation
algorithms, including some used by the COVAX
alliance, are driven by privately owned AI, says
Hagerty. "Proprietary algorithms make it hard to
look into the 'black box', and see how they
determine vaccine priorities."

The second is 'non-maleficence', or avoiding
needless harm. A system programmed solely to
preserve life will not consider rates of 'long COVID',
for example. Thirdly, human autonomy must be part
of the calculation. Professionals need to trust
technologies, and designers should consider how
systems affect human behaviour—from personal
precautions to treatment decisions.

Finally, data-driven AI must be underpinned by
ideals of social justice. "We need to involve diverse
communities, and consult a range of experts, from
engineers to frontline medical teams. We must be
open about the values and trade-offs inherent in
these systems," said Cave.

"AI has the potential to help us solve global
problems, and the pandemic is unquestionably a
major one. But relying on powerful AI in this time of
crisis brings ethical challenges that must be
considered to secure public trust."

More information: Using AI ethically to tackle
10.1136/bmj.n364

Does "AI" stand for augmenting inequality in the era
of COVID-19 healthcare? British Medical Journal
(2021). DOI: 10.1136/bmj.n304

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