LETTER TO THE EDITOR
McGill Journal of Medicine

On the Measure of Intelligence During the COVID-19 Pandemic

Christian Chartier[1]

[1]McGill University, Montreal, QC, Canada

Correspondence
Christian Chartier
Email: christian.chartier@mail.mcgill.ca

Publication Date
March 29, 2021

MJM 2021 (19) 17
https://doi.org/10.26443/mjm.v19i1.828

McGill Journal of Medicine

www.mjmmed.com

KEYWORDS
Artificial Intelligence, COVID-19, Machine Learning, Data Science, Interprofessional

> *"I propose to consider the question, 'Can machines think?' This should begin with definitions of the meaning of the terms 'machine' and 'think'."*
>
> *Alan Mathison Turing, Mathematician*

Dear Editor,

There are two commonly accepted ways to conceptualize intelligence. One involves competency in certain skills, such as problem-solving. The other, more abstract – dare I say innate – view holds that *being good* at a specific task is an insufficient condition for intelligence. Historically, the medical and artificial intelligence communities have grappled for position vis-à-vis these philosophies, with each side staking its claim for the more "authentic" definition of intelligence. This dispute has endured, for the most part, unresolved since the advent of artificial intelligence and its first foray into healthcare applications in the early 21st century. What is occurring when data scientists leverage massive quantities of data to replicate complex clinical decision-making, while still failing to teach a machine to correctly *think* about disease? This simultaneously validates imitative capacity as a metric for intelligence (machines can learn from infinite correct or incorrect diagnoses, far more than any human physician can absorb throughout an entire career) and preserves the medical profession's breadth of clini-

cal expertise and logic.

The COVID-19 pandemic has been an opportunity for armistice between technologists and clinicians. In the setting of unlimited priors, a machine can master a specific sequence of actions while disguising its poor proficiency in other tasks. In the case of a novel virus, longitudinal training data from the clinical setting is extremely limited and the body of scientific evidence is growing at an unprecedented pace. Physicians with general expertise are poised to lead the fight against COVID-19 while leveraging the throughput of technology to synthesize an updated account of what is known about the disease, its treatment and manifestations. There is an onus on both physicians and data scientists, as well as the larger research community, to work together in order to improve the infrastructure for assistive clinical technologies. Medical experts can create standardized data collection protocols in the clinical setting and provide feedback to inform the iterative design of AI technologies. At the same time, computer scientists can publish reproducible code and contribute to the translation of evidence into practical insights for immediate clinical implementation.

It is my hope that collaboration during these trying times will foster long-lasting bonds between the medical and AI communities. Physicians should be equipped to participate in technical conversations and optimize data collection for use by their peers, within and beyond medicine.