

## AI &amp; 5G Policy Briefing

# Medical professionals' discomfort with digital tech is stumbling block to spread of AI in health care, say experts



Health Minister Jean-Yves Duclos is pictured speaking at a Jan. 19 press conference in the Sir John A. Macdonald Building. A Health Canada spokesperson says regulatory requirements for adaptive machine learning-enabled medical devices could be launched in 2022 or 2023. *The Hill Times* photograph by Andrew Meade

A culture that divides the IT and medical aspects of health care is a stumbling block to the spread of AI in the medical sector, according to Dr. Ross Mitchell.

BY JESSE CNOCKAERT

Medical professionals' lack of comfort with new digital technologies is a major challenge that will need to be overcome as Health Canada develops the regulatory framework to support the use of artificial intelligence (AI) in medical devices, according to experts.

"In medicine, there's a huge divide between the IT side of the organization and the medical side of the organization, and they don't know where to put AI," said Dr. Ross Mitchell, the Alberta Health Services chair in artificial intelligence in health. "It's more the nature of the technology and the culture in health care. Those are the major stumbling blocks."

Artificial intelligence in medicine is used to mimic the problem-solving and decision-making skills of human medical professionals to increase accuracy and efficiency of patient diagnosis. Machine learning (ML) is a branch of artificial intelligence and computer science that focuses on the use of data and algorithms to imitate the way that humans learn, and gradually improve in accuracy.

There is not yet a regulatory framework for AI in medical

devices in Canada, and Health Canada is currently approving submissions for new medical devices that use AI on a case-by-case basis. Since 2018, Health Canada has worked to adapt its regulatory approach to better support digital health technologies. Key areas of focus for this initiative include AI, mobile medical device apps, wireless medical devices, and cybersecurity.

On Oct. 27, 2021, Health Canada released a document containing 10 guiding principles intended to promote safe and effective use of AI and ML in medical devices. The document was jointly published with the U.S. Food and Drug Administration (FDA) and the United Kingdom's Medicines and Healthcare Products Regulatory Agency (MHRA).

Health Canada anticipates the regulatory requirements for adaptive machine learning-enabled medical devices could be launched in 2022 or 2023, following internal and external consultations, said André Gagnon, a Health Canada media relations adviser, in an emailed statement to *The Hill Times* on March 21.

Mitchell told *The Hill Times* that the number of papers published by the academic sector on AI in health care has grown exponentially in recent years, but almost none of that has translated into clinical practice yet. The wide gap between concept and implementation of medical AI can be partly attributed to how open medical organizations are to change, he said.

"Most large health-care organizations proudly declare that they are physician-driven. They're run by physicians and other health-care workers, which is great, but there's a new, emerging class of medical professionals and they are data scientists [and]

medical computer scientists," said Mitchell. "This field hasn't been around long enough for these people to ascend into the highest ranks of leadership in medical organizations, and so, consequently, a lot of these decisions are being made by physicians with good intentions, but that simply lack the technical background."

Mitchell currently serves as a professor in the department of medicine at the University of Alberta, and as a fellow of the Alberta Machine Intelligence Institute (Amii), a non-profit organization formed in 2002 that partners with companies to help in the AI and ML fields.

According to Mitchell, another stumbling block to acceptance of AI in medical devices is a fear that the technology will replace human physicians. He said that AI can be useful in performing diagnosis, but human medical experts will always be needed because of their capacity for "incidental findings." As an example, he said that a hypothetical patient could go to a physician for their lungs to be examined, only for a doctor to realize the patient could have an issue in their spleen or heart.

"The AI algorithm that's trained to examine lungs is trained to ignore the heart, right? But a radiologist isn't. They look at the whole picture. Even if they're looking at the lung and they see something and they can't diagnose it, they'll pass it to their buddy who can," said Mitchell. "Incidental findings are a major thing in medicine. Lots of times people go in for some kind of routine scan and something is discovered accidentally."

Mitchell said that electronic health record systems put a lot of burden on health-care providers, and AI can help sort through the

complex data. He compared the introduction of AI in health care to the introduction of chainsaws to the logging industry. Chainsaws helped loggers cut down trees more easily, but did not replace loggers, he said.

"Physicians who have 'power tools' to help them with the complexity will be able to perform quicker and at a higher level and enjoy their work more," said Mitchell. "That burden should be put on the power tool and not on the physician. We want to move them away from the hand saw, and get them onto the chainsaw, because what they're really interested in is cutting down trees, not processing logs and putting them on the truck the right way."

The 10 guiding principles released by Health Canada are intended to "lay the foundation for developing good machine learning practice that addresses the unique nature of" AI and ML technologies, according to a press release. The list includes that the technology model should include a "human in the loop" rather than performed in isolation, and that model designs are implemented with attention to the fundamentals of good software engineering practices, data quality assurance, data management, and robust cybersecurity practices.

Mitchell said that new AI technologies should go through a testing process so medical professionals can develop confidence in their effectiveness, similar to how new drugs are put through clinical testing before distribution.



Dr. Ross Mitchell, a fellow of the Alberta Machine Intelligence Institute, says 'there's a huge divide between the IT side of [an] organization and the medical side of [an] organization.' *Photograph courtesy of Amii*

"When you're on the front line, you may not necessarily understand the details of the biochemical properties of how a drug works, but you're confident [and] you have trust in it because of the clinical trial and the research and presentations and conferences," said Mitchell. "There's a whole process of building trust. Because the underlying technology is vastly complex, and busy medical professionals don't have time to become experts in the details of how the drug works, you have to have some trust. The same thing applies in AI."

Dr. Diane Gutiw, vice-president of consulting for CGI, an IT and business consulting services firm headquartered in Quebec,

told *The Hill Times* that part of the difficulty with regulating AI in medical devices comes from ensuring the technology has been rigorously tested with sufficient transparency.

"The other big thing that I've been recommending is: make sure that this wasn't designed in silos; that it's not just software developers that have designed it, but you've got health-care clinicians also," she said. "When you're developing software that's giving clinicians direction on how to treat somebody or what a diagnosis is, you need some insight and transparency to make sure that's been done in a way that you're able to trust. Clinicians will not adopt these models if they don't have transparency."

Gutiw said she also has observed fears that AI could replace physicians, both from the public and from within the medical sector.

"I know there's a lot of fear that it's going to replace clinicians, but that's not the direction that it is going. It's really, at this point, providing more information to assist. It's not unassisted machine learning or AI," she said. "Some of the real benefits [of AI] are for diagnostic imaging. You're able to get a very precise or a high-probability answer to what the problem is, [and] you're able to avoid unnecessary surgeries and invasive procedures. You're also able to get a quicker diagnosis. You're able to see what you might not be able to see very quickly with an MRI."


A Health Canada report released on April 15, 2019, said the department is seeing the emergence of machine learning predominantly in image-based health-care applications, such as diagnostic imaging and radiology. The report identified several regulatory challenges facing the implementation of AI and ML in the medical sector, including how to ensure that data sets used during development are reliable and representative, and the question of who would be held accountable for mistakes made by the software.

"Artificial intelligence and machine learning technologies have the potential to transform health care by deriving new and important insights from the vast amount of data generated during the delivery of health care every day," said Gagnon in the emailed statement. "They use software algorithms to learn from real-world use and in some situations may use this information to improve the product's performance. However, they also present unique considerations due to their complexity and the iterative and data-driven nature of their development."

All medical devices in Canada are grouped into four classes with Class 1 devices representing the lowest potential risk (such as a thermometer) and Class 4 devices representing the greatest potential risk (such as pacemakers). All classes above Class 1 require a Medical Device Licence prior to being sold.

Alice Tseng, a partner at intellectual property law firm Smart

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## AI &amp; 5G Policy Briefing

# To take AI to the next level, we need a dose of wisdom

It has long been a vision of many in AI to conceive of machines capable of a richer version of a mind than that imagined by data-driven problem solving alone.

Peter Lewis

Opinion



There is no doubt that Canada is a global leader in artificial intelligence. Thanks to the foresight of the 2017 Pan-Canadian AI Strategy, the first of its kind globally, investment has transformed research, enterprise, and the



Innovation Minister François-Philippe Champagne is pictured in Ottawa on Sept. 14, 2020, with his then-press secretary Syrine Khoury. We may end up looking back and noticing that the result of the first five years of Canada's AI strategy was, essentially, just picking the next layer of low-hanging fruit, writes Peter Lewis. *The Hill Times* photograph by Andrew Meade

attraction of talent. Yet as talk of another "AI winter" abounds, can Canada uphold its momentum? Or have we reached a plateau?

To answer this, we should probably understand what such a plateau might look like. And what would climbing higher toward the vision of "machines that do

the sorts of things minds can do" mean?

We cannot ignore that debate has started to turn. As American scientist Gary Marcus recently articulated, "deep learning is hitting a wall." Marcus argues that because AI is a tool that essentially recognizes patterns, there is a limit to which

mental processes we are going to be able to simulate with the technique. We may end up looking back and noticing that the result of the first five years of Canada's AI strategy was, essentially, just picking the next layer of low-hanging fruit.

Another feature of AI based on deep learning is its insatiable

need for more data. To even the casual observer of the progress of modern AI technology, it must now seem implausible to conceive of AI tech without big data. The two have become inextricably linked in our minds: more data is better. Is this a problem?

The answer is emphatically "yes" if we want to challenge the emerging doctrines of surveillance and data linkage. Adopting today's data-driven AI creates a commercial and government imperative for widespread and high-frequency connected surveillance, which brings with it not only issues of privacy, but also of power, agency, and identity, with which we are only now beginning to grapple.

Regulation is clearly a crucial part of the picture. Ontario's 2021 consultation on "trustworthy AI" established some important priorities. Yet a common feature of such efforts is the stickiness of trying to define what "counts" as AI. There is a worry that

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## Time to capitalize on Canada's big AI advantage

Canada has not reached a plateau in AI research, but is instead a forefront contributor. Slowing those efforts will simply reduce us to a second-class global citizen in critical technology.

Suhayya Abu-Hakima

Opinion



Canada is a global leader in artificial intelligence because of decades of work by world-class luminaries at universities

and government labs. Small- and medium-sized enterprises (SMEs) have worked hard to further AI research and development.

I successfully exited two AI startups in Canada and hold 48 patents in AI related to messaging and security. My startups were never venture-backed but benefited from the scientific research and experimental development tax incentive program and Innovative Solutions Canada (ISC), which provided us with a first sale to government and allowed us speedier exports to the U.S. The National Research Council's Industrial Research Assistance Program also funded some research and development and internships.

The successful 2017 Pan-Canadian AI Strategy initially earmarked \$125-million, and its renewal in 2021 with \$443-million emphasizes AI commercialization, intellectual property protection, talent, and AI ethics. These are good areas of focus, but fostering AI entrepreneurship is also a key area. SMEs are targeted with a slice of the \$185-million for commercialization, including AI procurement

strategies, "democratic" capital to increase diversity and government equity positions, according to a September 2021 Information and Communications Technology Council report. This is not a bad list—if SMEs can be funded quickly without the typical 30 per cent overhead that reduces direct funding. I also doubt that venture or angel investors would celebrate governments taking SME equity.

Canada has not reached a plateau in AI research, but is instead a forefront contributor. Slowing those efforts will simply reduce us to a second-class global citizen in critical technology. AI is permeated in everything we do, whether it's data analytics, bioinformatics, automation, communication, or fintech. We have excelled in analytics and there are excellent advances in vision, but to truly advance AI to its promise in science fiction, we need to marry it strongly with robotics and advance in synthetics to get to the point of having AI walking around and assisting people day to day. Japan and the U.S. have advanced considerably,

and we need to partner to garner benefits for our aging population. I can envision a day, in the next decade or two, where I will get at least one intelligent synthetic helping me. However, security and privacy are two areas that must be better addressed.

With this innovation comes advances in automated and connected vehicles, including cars, buses, and trucks. Companies like Tesla, Ford, and BMW are making incredible advances in this field, while Google, Apple, and BlackBerry have been in a race for some time for automated vehicle software dominance. Canada needs to leverage AI and 5G to connected-vehicle technology and advance its national infrastructure to support connected vehicles, which have been shown to be safer to operate in a hybrid mode than those with only a human operator. This future is here, and Canada's infrastructure needs to adapt fast. We need intelligent highways that work in conjunction with connected and automated vehicles to be standardized quickly. This is where Canadian cities can

partner with the carriers to ensure that 5G is rolled out with the needed infrastructure support, with the necessary licensing required by the CRTC.

Wireless carriers in Canada are already deploying 5G. The ENCQR consortium, which includes large telecom companies in partnership with government, has been an excellent example of fostering SMEs to leverage 5G. This \$400-million consortium includes federal, Quebec, and Ontario funding is up for renewal and was successful in getting 1,000 SMEs engaged over the last five years. ENCQR's second phase should include a major AI track and expand across Canada since more provinces would like to participate—with a simpler application process for SMEs. We need a consortium for artificial intelligence SMEs like ENCQR. It is not clear to me that Canadian private high-tech consortium Scale AI, with investments of \$230-million from the federal government and \$53-million from Quebec for large projects, has a strong SME focus. SMEs are the lifeblood of our economy and each of the Scale AI projects should aim to have several SME partnerships. At a minimum, its projects should cross over with ENCQR.

Dr. Suhayya (Sue) Abu-Hakima is the co-founder and CEO of Alstari Corporation, her third and most recent AI tech startup.

*The Hill Times*



Finance Minister Chrystia Freeland is pictured on Feb. 17. There has been a lot of investment in AI-related technologies in recent years, starting with a broader move towards digitizing information, managing data, investing in infrastructure such as the cloud, and everything that has led to some firms even being able to deploy AI in a meaningful way, writes Kristina McElheran. *The Hill Times* photograph by Andrew Meade

# How does AI factor into growing Canada's economy?

Building the Canadian talent pool will be essential to leveraging this fast-rising technology for growth in the Canadian context.

Kristina McElheran

Opinion



Artificial intelligence (AI) is increasingly seen as one of the most transformative technologies of our era. However, little is known about how widely it is adopted by firms, what sorts of firms are adopting it first or most effectively, nor how they plan to apply it. This lack of reliable information on the use of AI has made it difficult to formulate evidence-based predictions.

This has not stopped people from wondering, and often worrying, about the role of AI in the economy and the future of work. My University of Toronto colleagues, professors Avi Goldfarb, Joshua Gans, and Ajay Agrawal, convened an influential meeting of the National Bureau of Economic Research (NBER) specifically on AI in Toronto in the fall

of 2018. Some of the top minds in economics and management were there. We discussed and agreed on a lot of things, but mostly we left with more questions than answers. My main contribution was to raise the alarm about the need to measure AI and how important it is to do this at the very earliest stage of its diffusion. To that end, I have worked with professor Erik Brynjolfsson of Stanford University and researchers with the U.S. Census Bureau to examine this in the U.S. context. Some of our results apply to Canada and elsewhere.

First, we have to recognize that AI is a very flexible technology. In fact, it is actually a *class* of technologies that more practically are discussed with terms like machine learning, natural language processing, voice recognition, and other “down-to-earth” applications. Yet, even these more-distinct applications are still quite broad, and they share a quality that academics think of as being a “general-purpose technology” (GPT). In a nutshell, this means that it is flexible, likely to diffuse quite broadly, and will have potential for high economic impact. Examples of GPTs in the past include the steam engine, electrification, and my personal favourite, the commercial internet.

Yet, the challenge with these flexible technologies is that the firms intending to use them have to do a lot of inventing around them to make them productive. They have to specify how the technology should be applied, and how intensively, and what it

should replace or augment. This, in turn requires imagination, innovation, and good old-fashioned execution. Even more daunting, firms often have to reshape the business activities and production processes that will leverage these technologies. It boils down to “it will take investment, time, and co-ordination.” In short, there is a gap between when the technology diffuses and when it shows up in the economy.

Where are we on this journey with respect to AI? We know that there has been a lot of investment in AI-related technologies in recent years. Going back a few years, this investment actually starts with a broader move towards digitizing information, managing data, investing in infrastructure such as the cloud, and everything that has led to some firms even being able to deploy AI in a meaningful way. And even with this lead-up, the “hype” far outstrips the actual deployment, in practice.

How do I know this? This has started to be measured in the U.S. A new nationally representative survey, the Annual Business Survey (ABS), addresses this data gap. Brynjolfsson and I collaborated with the Census Bureau on the AI-related elements of that survey. The ABS collects information on the adoption and use of several advanced technologies—including those most closely associated with advances in AI, such as machine learning, machine vision, natural language

# To take AI to the next level, we need a dose of wisdom

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unless this can be narrowed down, almost any automated decision-making or data-driven decision support system could be included, and then the ability to regulate and legislate becomes unwieldy.

Many people tie themselves in knots trying to define “intelligence,” hoping that that will lead us to somewhat of a more complete (and, they often say, more helpful) definition of “artificial intelligence.” Much of this misses the point, at least when deciding when to delegate to a machine an activity previously done in society by human minds. Once we have taken this step, we have already admitted a certain AI-ness to it.

On the other hand, others have made the decision to stop using the terms “artificial intelligence” and “machine learning” altogether, preferring specifics about the technology and who is responsible for it. AI has become, Emily Tucker argues, “a phrase that now functions in the vernacular primarily to obfuscate, alienate, and glamorize.”

There is no doubt that we ought to engineer machines for accountability, or that those who build and operate them are responsible for the machine’s actions. But we have already reached the point at which neither full control nor understanding can always be assumed. What then?

This relinquishing of control is not simply a bug with AI; for many it is a necessary feature of what an autonomous mind-like machine would require. Perhaps in some ways we need to shift towards thinking about our relationship with someone else’s AI like someone else’s dog: cautious, yet holding the owner fully to account if things go wrong. And as Stanford University professors Byron Reeves and Clifford Nass famously found, people routinely and naturally treat machines like people, whether it’s being polite to a voice assistant or feeling sympathy for robots.

The question runs deeper: when is AI based on deep learning the kind of AI that we want

to delegate to? Or is it missing something else profoundly mind-like? Today’s AI technologies contain an unusual imbalance of insight and understanding: new insights arise from the models, while many of the “qualities” that a human mind would have brought are utterly absent. Important aspects of our mental activity are, as yet, nowhere near delegated. There is an important distinction to make here between AI as a simulated or synthetic mind, and “AI” as speech, the marketing term so often used to obscure, divert, or confuse.

So, what ought future Canadian AI strategy strive for? If the answer is more computation, bigger datasets, and better training algorithms, then we will indeed have reached a plateau. The world already knows how to play that game, and “AI” marketing gives us a clue as to where it goes next. If “AI”-as-surveillance is the extent of our modern-day vision of intelligent machines, then we will have failed millions of Canadians, and especially those at the poor end of structural power relationships.

On the other hand, the worry of an “AI winter” only exists if we cannot fathom how to see spring. Perhaps the time has come for a radical rethink of what synthetic minds we want operating within our society. Are these the hyper-rational, data-hungry prediction machines of the late 2010s? Or ought we to expect, and challenge the immense talent within Canada, for more?

It has long been a vision of many in AI to conceive of machines capable of a richer version of a mind than that imagined by data-driven problem solving alone; to include reflection, empathy, pause-for-thought, creativity, sociality, nuance, trust, and judgement, not just prediction. In short, let’s challenge ourselves to imagine machines with a dose of wisdom. And let’s bring a dose of wisdom to how we approach the use of machines in our society, too.

Dr. Peter Lewis holds a Canada Research Chair in Trustworthy Artificial Intelligence at Ontario Tech University.

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# Canada's bold AI strategy has been a success—let's double down

Artificial intelligence will be a foundational element of future economic success. The countries that lead in foundational and applied AI will position themselves to grow and prosper.

Garth Gibson

Opinion



Innovation Minister François-Philippe Champagne is pictured in the West Block on Dec. 1, 2021. Countries around the world are aware of Canada's momentum on AI—but many are also focused on catching up, writes Garth Gibson. *The Hill Times* photograph by Andrew Meade

already been done—and done right.

In 2017, the federal government unveiled and financially supported the Pan-Canadian Artificial Intelligence Strategy. The goal was clear: to capitalize on Canada's strength as a pioneer in AI research and cement its position as a world leader in the field.

Five years later—thanks to support from the federal government, Ontario and other

provincial governments, and the private sector—Canada's strategy leadership on AI is acknowledged around the globe.

These targeted and efficient investments have helped to put our country in an enviable position. The Brookings Institute has described Toronto's AI cluster as “one of the most ambitious efforts in North America to upgrade a strong ecosystem into a world-class position.” A recent *New York Times* feature labeled Toronto

“the quietly booming tech town” and noted that the city is now the third-largest tech hub in North America. Toronto's tech workforce is expanding quicker than that of any U.S. city, and AI is a significant part of that.

The federal government's Pan-Canadian AI Strategy has empowered Canada's national AI bodies—the Vector Institute, Alberta Machine Intelligence Institute, and Mila-Québec AI Institute—to attract and retain top AI researchers. By making clear that AI research is a Canadian priority, it also jumpstarted growth in the supply of homegrown AI talent. Last year, more than 1,400 Ontario students began their studies in a Vector-recognized AI-related master's program, an increase of 270 over the previous year.

That increase is crucial because AI represents a once-in-a-generation opportunity to improve the lives of Canadians—not only by giving Canadian companies new tools to enhance productivity and create high-paying jobs but also by driving innovation in other areas that affect quality of life. Advances in AI-powered precision medicine are already allowing doctors to better identify disease risk and better anticipate the onset of medical crises in Ontario, such as cardiac arrest.

Artificial intelligence will be a foundational element of future economic success. The countries that lead in foundational and applied AI will position themselves to grow and prosper.

With its investments in AI research and corresponding growth in AI talent, Canada is laying the groundwork for future success. Large Canadian companies—many of whom include our founding private sector partners at Vector—are already making AI an essential (and tangible) element of their operations.

The challenge now is ensuring that the benefits of AI are extended to small- and medium-sized enterprises (SMEs), which drive

both the Canadian economy and the job market. A heightened focus on efforts to commercialize and apply AI research will position these companies to better compete in both the national and global marketplace. And it will amplify the impact of AI investments already made by governments and the private sector.

We are already seeing some progress on this front, thanks in part to the federal government's 2021 commitment to invest \$185-million over five years to support AI commercialization.

At Vector, we recently launched a program that helps SMEs build AI fluency and critical capabilities—so they can apply technological solutions to real-world challenges and opportunities. And this is only a beginning.

As with any success story, the risk going forward is complacency. We need to double down, not stand pat. Countries around the world are aware of Canada's momentum on AI—but many are also focused on catching up. They understand, as we do, that leadership in AI translates into increased productivity and competitiveness. Canada needs these tools of growth more than ever as it strives to recover from the economic impact of the pandemic.

Last year, the federal government renewed its support for its Pan-Canadian AI Strategy. This sends an important message about our country's determination to build on its success by attracting and retaining top talent, strengthening local and regional AI ecosystems across the country, and keeping successful AI companies here in Canada.

Tomorrow's prosperity depends on today's decisions. We position Canada for future success when we commit to supporting growth and excellence in the pivotal field of artificial intelligence.

*Dr. Garth Gibson is president and CEO of the Vector Institute. The Hill Times*

## Medical professionals' discomfort with digital tech is stumbling block to spread of AI in health care, say experts

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and Biggar, said that Health Canada's current regulatory regime doesn't contemplate ML in medical devices with algorithms that change over time. Algorithms can be locked, meaning their function does not change, or they can be adaptive, meaning their behaviour can change over time. The current regulatory regime doesn't accommodate the changing nature of adaptive algorithms, according to Tseng.

“If you were to have machine learning software, basically

every time the machine learns something ... you'd need to file a new medical device licence, or what you would do is file an amendment, which you just can't really do given that with machine learning, it's continuous,” she said. “Because of the nature of how machine learning algorithms work, where it's adaptive, you get new data and therefore, your output is different, even though your input is the same. You can't continuously file for new amendments with Health Canada. That's why a new regime to reflect machine learning is required.”

Medical devices approved by Health Canada currently on the market use locked, rather than adaptive, AI algorithms.

Tseng said that Canada may look to the FDA in the U.S. for guidance on how to develop a regulatory framework for AI and ML in medical devices. On Jan. 12, 2021, the FDA published an action plan proposing a “Predetermined Change Control Plan” that would include the types of anticipated modifications, based on a retraining and model update strategy, and the associated methodology

being used to implement those changes.

“Right from the start when you're filing your application you specify what modifications you're expecting, and you specify the protocol or the methodology you're going to use to make sure that any risks with those modifications are managed, known, or at least assessed,” said Tseng. “Maybe that's what we will do. We shall see.”

Another challenge in developing regulations for AI and ML in medical devices is ensuring the data is representative of the

area where it is used, according to Tseng.

“Let's say it's a wealthier area [and] maybe the type of medical conditions you see, [or] the type of testing that's done ... maybe that varies compared to what might be conducted in a different institution or in a different jurisdiction, all within Canada,” she said. “That's actually really important—to make sure that that testing [and] the data you get is sufficiently reflective of whatever population it's going to be used for.”

To support the AI sector, Canada's 2021 federal budget included a promise of up to \$443.8-million over 10 years in support of the Pan-Canadian Artificial Intelligence Strategy, which has the objective of attracting and retaining AI researchers, and to support a national research community on AI through training programs and workshops.

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