# CREATING AI LEGAL PERSONHOOD:
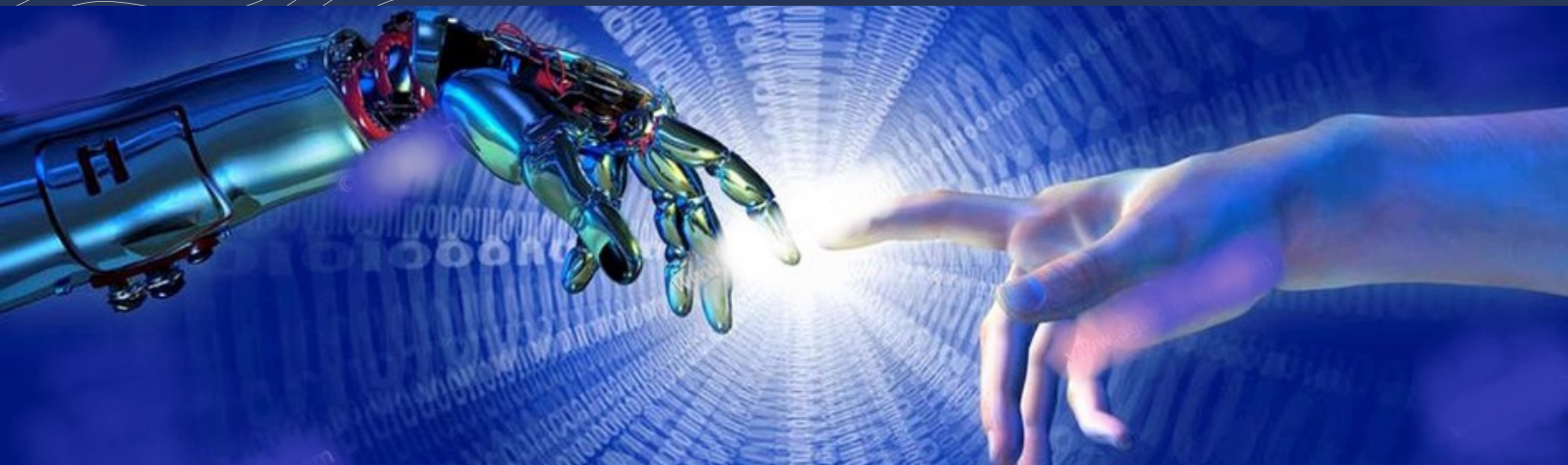## WHAT DOES THIS MEAN FOR CANADA?

UNIVERSITY OF TORONTO
FACULTY OF LAW

FUTURE
OF LAW

**Future of Law Lab**
**University of Toronto Faculty of Law**

**June 5, 2023**

## About the Future of Law Lab

The Future of Law Lab is a platform for students, academics, lawyers, and other professionals to participate in collaborative initiatives exploring how the law will evolve in the future. We will dive into the intersection of law, technology, innovation, and entrepreneurship, with programing dedicated to each of these streams. As a hub of interdisciplinary activity, we are dedicated to bringing together individuals from all backgrounds to examine the changing face of the legal profession.

## About the Artificial Intelligence Legal Personhood Working Group

This report is written by Luka Knezevic, Sabrina Macklai, and Ian T. D. Thomson, upper-year students at the University of Toronto Faculty of Law and working group leaders of the Artificial Intelligence Legal Personhood Working Group (the "Working Group"). The eight first- and second-year students at the Faculty who generously contributed to this report, in alphabetical order, are: Ben Eisen, Daniel Fogel, Elizabeth Hicks, Jenna Nadel, Sonali Ravi, Calvin Wang, Alessia Woolfe, and Christoper Yoannou.

The Working Group's objective is to help policymakers determine what Canada's approach should be to AI personhood. The Working Group specifically researched the impact of creating a category of AI personhood on different domains.

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**Executive Summary**

Artificial Intelligence ("AI") is machine-demonstrated intelligence. Humanity's fascination with AI has its roots in antiquity, with mythological stories of intelligent bronze giants. Although there has been rapid technological development in the millennia since, the development of truly sophisticated AI machines is a more recent phenomenon. The nascency of this area is perhaps best demonstrated by the excitement that ChatGPT, a mere AI chatbot has generated. One could therefore not be faulted for mistakenly believing that the days of "intelligent bronze giants" are very far away. However, this simplistic view neglects the exciting innovations that AI is already pushing through in a variety of industries.

Indeed, AI is helping doctors better diagnose cancer, people drive their cars more safely, create art, and invest. These innovations could help drive a more efficient and equitable world. However, that is not to say that AI does not raise many concerns. Given AI's complexity, its proliferation arguably creates problems for users whose limited knowledge means they may not be able to spot problems with AI generated suggestions. This subsequently leads to significant downside risks as users may unknowingly proceed with an incorrect approach. The repercussions could be significant with misdiagnosis, perpetuation of systemic biases, or car accidents. This creates a challenge for regulators and how they should combat these negative scenarios from arising.

Given AI's potential for improving our lives, many jurisdictions have grappled with how best to encourage its adoption while regulating and minimising its drawbacks. Indeed, jurisdictions all over the world such as the European Union and India are looking at ways to effectively manage AI. For Canada this means having the ability to analyse the legislation of other jurisdictions before concluding on the approach that would seemingly work best for Canada. However, that is not to say that all the outstanding questions in this field have been answered, and one of the most controversial questions that keeps popping up is whether or not AI should be granted legal "personhood." The determination of whether or not to grant legal personhood is only one aspect of the broader regulatory landscape as pertains AI, but it is one area whose importance cannot be understated. One cannot be faulted however for misjudging its importance however, for detailed research on it is relatively scant and legal personhood does currently appear in the Canadian government's proposed legislation under C-27, the *Artificial Intelligence and Data Act ("AIDA").*[1] Therefore, this report seeks to shed light on a legal area that has seemingly not been given enough focus in the discussions on how to regulate AI.

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[1] Bill C-27, *Digital Charter Implementation Act*, 2022

**What Exactly Does it Mean for AI to have Legal "Personhood"?**

Simply put, AI legal "personhood" refers to recognizing AI as a legal person. This means AI having the same (or similar) rights and obligations that humans or other legal persons hold.

The idea of extending legal personhood to non-humans exists outside of AI. The legal status of animals and corporations are examples of where legal personhood has been raised. In the case of the latter, Canada, like many other Western societies, recognizes the distinct legal personality of a corporation. That is, corporations are treated as separate and distinct from its shareholders, directors, and officers. It can enter contracts and own property just like a natural person can. It may also be sued and sue others in its own name.

A category of AI personhood could potentially be structured in a similar way. AI would be treated separately from its creators. This means holding the AI directly liable for its generated outputs, without extending this liability to the AI's creators. The discussion of AI personhood has often been raised in the context of self-driving vehicles and other autonomous systems, where it is unclear who retains liability (and accountability) for incidents related to their malfunction.

Canada has yet to create a category of legal personhood for AI actors, although its recent proposed legislation with *AIDA* indicates that it is at least aware of some of these issues and has begun thinking about regulatory frameworks. The debate over AI legal personhood has also reached the international stage; while no country has officially granted legal personhood to AI systems, there has been discussion of what such category would entail.

**How AI Personhood Will Impact Canadian Domains**

Creating a category of AI legal personhood will undoubtedly create new legal, ethical, and practical challenges across our society. In this report, the Working Group investigated the impact of creating a category of AI legal personhood on four broad domains: 1) health; 2) transportation; 3) innovation; and 4) economic. The purpose of their research was to canvass at a high-level some of the potential impacts, both positive and negative, a category of AI legal personhood would create. These findings are by no means comprehensive; rather, they aim to illustrate the complexity of granting AI legal personhood. Policymakers should keep this complexity in mind, including the questions the Working Group members pose, when they consider the question of AI legal personhood.

**Health Domain**

AI is already significantly influencing the medical field. Currently, 86 percent of healthcare providers already use some form of AI for their work,[2] and AI has made major contributions to diagnosing medical conditions.[3] For example, in the field of dermatology, a deep convolutional neural network was given a training sample of almost 130,000 photos of cancerous and non-cancerous skin growths.[4] After the model was trained, it was able to diagnose skin cancers at the same level of performance as 21 board-certified dermatologists.[5] This is a significant finding because the neural network took a fraction of the time and money to learn to identify these cancers, versus the 21 dermatologists who went to school for years.[6] AI has also been used as a prognosis tool which allows doctors to analyse patients in an early state on a scope the human eye cannot detect.[7] An analysis of 25,000 claims and lawsuits revealed that inadequate assessment was the most common factor in cases with incorrect diagnoses. These studies on AI's efficacy demonstrate that AI can meaningfully support physicians and reduce misdiagnoses by providing them with a second opinion, leading to a deeper understanding of the patient's illness.[8] Moreover, AI can improve patients' experiences by providing information on prescription drugs, and scheduling appointments by searching different hospitals and clinics.[9]

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[2] Benedict See, "Paging Doctor Robot: Medical Artificial Intelligence, Tort Liability, and Why Personhood May Be the Answer" (2021) 87:1 Brook. L. Rev. 417 at 417.

[3] Kanadpriya Basu et al, "Artificial Intelligence: How is It Changing Medical Sciences and Its Future?" (2020) 65:5 Indian J Dermatol. 365-370.

[4] Ibid.

[5] Ibid.

[6] Ibid.

[7] Ibid.

[8] https://www.thedoctors.com/siteassets/pdfs/12043_ai_whitepaper_nomarks_f.pdf

[9] Kanadpriya Basu et al, supra note 3.

However, there remain many concerns regarding the use of AI in enhancing medical health services. This section examines three areas of concern: medical liability, potential biases and discriminatory outcomes, and job security.

<u>Black Box Nature of AI: Tort Liability and Case Law</u>

Although the law remains unsettled, physicians and health systems are usually liable under malpractice and negligence theories in the law, and algorithm designers are subject to products liability.[10] The issue of legal liability in medical AI use arises from the "black-box" nature of AI.[11] In a black box system, the developers do not know exactly how the algorithms make decisions because the algorithm's manipulation of the data remains hidden.[12] Assigning liability becomes difficult as nobody knows whether an erroneous AI output is a one-off accident, or the result of a physician's negligence.[13] When using AI, physicians may be expected to rely on AI outputs as optimal and correct. Yet, the black-box algorithm prevents physicians from viewing its computations, keeping physicians in the dark from determining whether an AI decision is beneficial, an innocent miscalculation, or negligence. Accordingly, if physicians are held liable for an AI's negligent decision, physicians may become overly cautious when making decisions, and may even forgo using potentially lifesaving AI technology to avoid lawsuits.[14]

Currently, most lawsuits involving AI in healthcare concern its use as a tool for surgery rather than a diagnostic tool. However, this is a developing area of case law, and there are no leading cases dealing with AI in the medical industry within Canada. This may be because suits are settled out of court. Thus, most of the case law involving AI in healthcare comes from the United States.

One case involving AI in healthcare is *Mracek v Bryn Mawr Hospital*, 610 F. Supp. 2d 401 (ED Pa. 2009).[15] In the case, the plaintiff brought an action for damages against Intuitive Surgical, Inc. arising out of strict product liability, strict malfunction liability, negligence, and breach of warranty in connection with a prostatectomy performed with an operative robot called the "da Vinci," manufactured by Intuitive. The court granted summary judgment against the plaintiff, as the patient failed to meet the burden of proof

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[10] Maliha, George et al. "Artificial Intelligence and Liability in Medicine: Balancing Safety and Innovation." *The Milbank quarterly* vol. 99,3 (2021): 629-647. doi:10.1111/1468-0009.12504.
[11] Benedict See, "Paging Doctor Robot: Medical Artificial Intelligence, Tort Liability, and Why Personhood May Be the Answer" (2021) 87:1 Brook. L. Rev. 417 at 417.
[12] Ibid.
[13] Ibid.
[14] Ibid.
[15] *Mracek v Bryn Mawr Hospital*, 610 F. Supp. 2d 401 (ED Pa. 2009).

of strict liability by not submitting an expert report critical of the da Vinci robot.[16] The court held that the da Vinci is a complex machine that requires expert testimony to reasonably determine its defectiveness; multiple "error" messages and an inability to restart its operation were insufficient to establish defect in products liability.

There are currently nearly 100 lawsuits filed by patients against Intuitive.[17] Lawsuits against the da Vinci Surgical System have been reported outside the United States, including in Australia, Canada, and numerous countries in Europe. However, the details of these cases are not widely available. Saskatchewan recently purchased its first da Vinci Surgical System in September 2022, and while all surgeries have been successful so far, it is likely that lawsuits related to its use will eventually arise.[18]

There have also been successful cases in products liability. In *Singh v Edwards Lifesciences*, 151 Wn. App. 137, 151 Wash. App. 137, 210 P.3d 337 (Wash. Ct. App. 2009), the plaintiff's heart was burned during bypass surgery when Edwards Lifesciences' monitor malfunctioned and turned off the fail-safe devices to cause the Swan-Ganz catheter to heat up.[19] The jury found the defendant's conduct malicious and awarded compensatory and punitive damages. This case reiterates that the standard for defectiveness is high in cases dealing with complex machines, and unless the product is obviously defective, expert testimony may be required.

In an effort to solve the tort liability issue, the European Parliament proposed granting AI personhood, because AI's autonomy has allowed it to interact with and alter the surrounding environment.[20] In contrast to the United States courts' approach, the European Parliament's proposal subjects high risk AI systems to strict liability, while allowing lower-risk AI systems and operators to fall under a negligence-based liability scheme.[21] A paper from the Canadian College of Health Leaders rejected the European

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[16] To bring a products liability action in Pennsylvania, a plaintiff must demonstrate that: (1) the product was defective; (2) the defect existed while the product was in the control of the manufacturer; and (3) the defect was the proximate cause of the plaintiff's injuries; see *Walton v. Avco Corp., 610 A.2d 454, 458-59 (Pa. 1992)*.

[17] Kristin Compton, "da Vinci Robotic Surgery Lawsuits," online: *drugwatch* <https://www.drugwatch.com/davinci-surgery/lawsuits/>. This number comes from Intuitive's most recent annual report. There have been many other lawsuits; for example, Intuitive settled 3000 suits in 2014.

[18] Brooke Kruger, "New surgical robot 'Daryl' now helping assist Sask. Medical operations", *Global News* (25 November 2022), online: <https://globalnews.ca/news/9305896/surgical-robot-daryl-sask/>.

[19] *Singh v Edwards Lifesciences*, 151 Wn. App. 137, 151 Wash. App. 137, 210 P.3d 337 (Wash. Ct. App. 2009).

[20] Benedict See, "Paging Doctor Robot: Medical Artificial Intelligence, Tort Liability, and Why Personhood May Be the Answer" (2021) 87:1 Brook. L. Rev. 417 at 417

[21] Kanadpriya Basu et al, supra note 3.

proposal.[22] A strict liability approach towards the developers of medical software and devices may address the concerns of accountability and compensation, but may inadvertently impede innovation of AI in medicine.[23] Despite this concern, the European proposal may ultimately become a blueprint for other countries to follow.[24] As Canada does not currently have a legal framework governing AI, policymakers may consider adopting legislation modelled after the European Union's *Artificial Intelligence Act* to promote uniformity, rather than a piecemeal approach as seen in the United States, to AI governance in the medical industry.[25]

A question that should be a priority for policymakers/legal academics to answer to effectively address the tort liability problem is which party should bear the burden of liability. Without any framework in North America, authorities can look to Europe for ideas. Additionally, policy makers and academics should consider if simply creating a new AI standard of care for doctors is sufficient to avoid the undesirable consequences discussed. This standard of care may be articulated as follows: if doctors maintain AI literacy and exercise a reasonable level of care when interpreting AI-generated results, they cannot be held liable.

AI and Job Security

Another issue that AI presents in the medical field is the fear that AI will replace jobs. Some AI proponents believe specialties such as radiology and pathology are doomed for extinction.[26] A study of 321 Ontario medical students found that while students are generally optimistic regarding AI's capabilities to carry out a variety of healthcare functions, they were concerned about AI's impact on the job market.[27] 34 per cent of students agreed that AI would reduce jobs in the field, and 25 per cent agreed that it will or has already impacted their choice of specialization.[28]

This sentiment echoes the prediction of the 1990s that ATMs would eliminate the teller job. As history shows, it did not. While cash handling became less important for tellers, their interpersonal abilities to market and deal with bank clientele became critical. In other words, the ATM effectively changed the primary focus of the teller job

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[22] Sunam Jassar et al, "The future of artificial intelligence in medicine: Medical-legal considerations for health leaders" (2022) 35:3 Healthcare Management Forum 185-189.
[23] Ibid.
[24] Ibid.
[25] Ibid.
[26] Ken Budd, Will Artificial Intelligence Replace Doctors? (July 2019), online: Association of American Medical Colleges <https://www.aamc.org/news-insights/will-artificial-intelligence-replace-doctors>.
[27] Nishila Mehta et al, "Knowledge of and Attitudes on Artificial Intelligence in Healthcare: A Provincial Survey Study of Medical Students" (2021) 10:75 MedEdPublish.
[28] Ibid.

emphasizing that there are conditions that technological advancements cannot replicate.[29]

Similarly, the development of AI in the medical field may involve an analogous shift in the emphasis of the physician's role from strict interpretations of lab results to more subjective aspects of medicine. Radiologists and pathologists can succeed in the age of AI by being well equipped to use AI tools to participate in data management and integrated diagnoses.[30] An example of an integrated diagnosis may occur when specialists interpret an unexpected result from an AI algorithm, thus integrating human and AI expertise.[31] Furthermore, radiologists will be necessary for detecting less-common diseases that AI algorithms might not broadly cover, such as rheumatoid arthritis and sickle cell disease.[32]

More generally, the use of AI in the medical field for computational tasks allows physicians to direct their focus on patient care and understanding. Such emphasis entails not only ameliorating bedside manners, but also ensuring equal health care across groups (i.e., keeping biases in check) and conducting effective diagnostic analyses by gathering the subjective components of illness that cannot be represented by lab results.

Importantly, the Canadian Association of Radiologists published a white paper on AI in radiology, and found that there is no evidence in the literature that AI can replace radiologists in day-to-day clinical practice.[33] On the contrary, studies have shown that radiologist-augmented approach to diagnostics, similar to the integrated diagnostics discussed above, could improve performance of two deep neural networks by resolving their disagreement.[34] Despite fear amongst aspiring doctors, authoritative bodies are optimistic about the possibilities AI can bring to patient care.

Thus, physicians' fears over job security can be mitigated by an understanding that AI will not result in an overall reduction in the number of medical jobs, but rather a shift in the emphasis of what medical jobs may entail. Policymakers ought to consider how they can work with professional medical bodies to ameliorate these concerns and emphasize this shift.

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[29] James Pethokoukis, "What the Story of ATMs and Bank Tellers Reveals About the 'rise of the Robots' and Jobs" (6 June 2016), online: *AEIdeas* <https://www.aei.org/economics/what-atms-bank-tellers-rise-robots-and-jobs/>.

[30] Ken Budd, "Will Artificial Intelligence Replace Doctors?" (July 2019), online: *Association of American Medical Colleges* <https://www.aamc.org/news-insights/will-artificial-intelligence-replace-doctors>.

[31] Ibid.

[32] Ibid.

[33] An Tang et al, "Canadian Association of Radiologists White Paper on Artificial Intelligence in Radiology" (2018) 69:2 Canadian Association of Radiologists Journal 120-135.

[34] Ibid.

AI Bias and Discrimination

The black box nature of AI raises further social issues when it conceals inherent biases within AI models. These biases, when left uncorrected, can amplify existing social inequities. Biased models may arise from design, where the model learns to perpetuate disparities based on a label tainted with social inequality, or from unrepresentative data on which the model is developed.

One example of biased AI models arising from design is the risk assessment model used to predict future crime based on arrest records. A 2016 study of risk scores found that Northpointe's AI model classified black defendants who did not re-offend at a substantially higher rate than white defendants who did not re-offend, revealing significant racial disparities that could not be explained by isolating the effect of race from criminal history.[35] The bias did not come from the data but rather from the design of the AI model. Unfortunately, Northpointe did not disclose the calculations used to determine a defendant's risk score, making it impossible to see what drives the disparity. Although this example of label bias arose in the context of risk assessment for re-offenders, it is easy to see its implications in the medical field; for instance, a label may consistently give a lower predictive value for a particular diagnosis in a vulnerable group or may disproportionately allocate management resources to patients from wealthier neighbourhoods and away from poorer ones.[36]

Biases may also arise from data on which the AI model is developed. For example, patient data in a minority group may be distributed differently from a majority group because of biological and non-biological differences, leading to minority bias.[37] Moreover, studies show that individuals from vulnerable populations – including those with low socioeconomic status[38], psychosocial problems[39], and immigrants[40]—are more likely to

[35] Julia Angwin et al, "Machine Bias" (23 May 2016), online: ProPublica
<https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>. See also
Julia Angwin et al, "How We Analyzed the COMPAS Recidivism Algorithm" (23 May 2016), online:
ProPublica<https://www.propublica.org/article/how-we-analyzed-the-compas-recidivism-algorithm>.
[36] Alvin Rajkomar, Michaela Hardt, Michael D. Howell, et al, "Ensuring Fairness in Machine Learning to
Advance Health Equity" (2018) 169:12 Ann Intern Med at 866-872. doi:10.7326/M18-1990.
[37] Ibid.
[38] Arpey NC, Gaglioti AH, Rosenbaum ME. How socioeconomic status affects patient perceptions of
health care. J Prim Care Community Health. 2017;8 (3):169–175. doi: 10.1177/2150131917697439.
[39] Ng JH, Ye F, Ward LM, Haffer SC, Scholle SH. Data on race, ethnicity, and language largely
incomplete for managed care plan members. Health Aff (Millwood). 2017;36(3):548–552. doi:
10.1377/hlthaff.2016.1044.
[40] Ramoni M, Sebasiani P, "Robust learning with missing data" Mach Learn. 2001;45(2):147–170. doi:
10.1023/A:1010968702992.

received fractured healthcare, leading to missing and unrepresentative data.[41] AI systems that aid in clinical decision-making may misinterpret low sample size or lack of health care use as a lower disease burden, which consequently generates inaccurate prediction models for certain groups.

To address these discriminatory issues of the black box nature of AI, policymakers should consider legislation regulating the way in which AI tools are designed, defining standards and best practices for creating labels to lessen design model biases. Additionally, governmental action can be taken to build accurate and comprehensive databases amalgamating different sources of patient data that algorithm developers can access, making the data on which AI is trained more representative of the Canadian population. Indeed, while the proposed *AIDA* under s.4(a) prohibits AI systems from conduct that "may result in serious harm to individuals or harm to their interests,"[42] critics have stated that the legislation needs to be more aware that AI systems can violate human rights "at incredible speed and scale, and in ways that may be hidden or discreet as well as discriminatory and arbitrary."[43]

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[41] Milena Gianfrancesco et al, "Potential Biases In Machine Learning Algorithms Using Electronic Health Record Data" (2018) 178:11 at 1544-1547. doi: 10.1001/jamainternmed.2018.3763.

[42] Minister of Innovation, Science and Industry, *Bill C-27: An Act to enact the Consumer Private Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act and to make consequential and related amendments to other Acts*, Parliament of Canada, (June 16, 2022) (at https://www.parl.ca/DocumentViewer/en/44-1/bill/C-27/first-reading)

[43] Christelle Tessono et al. *AI Oversight, Accountability and Protecting Human Rights: Comments on Canada's Proposed Artificial Intelligence and Data Act,* RBC Cybersecure Police Exchange, (2022) (https://www.cybersecurepolicy.ca/aida), at 9.

**Transportation Domain**

In the transportation sector, AI is being used to eliminate the need for human drivers and create vehicles that can drive themselves. The Society for Automotive Engineers outlines five levels of automation, ranging from zero (no driving automation) to five (full driving automation). A vehicle of automation level of three can operate without a driver, but requires constant supervision by a human driver that is ready to take control if necessary. Today, the highest level of automation on the roads is level three.[44]

Partially automated vehicles are available in Canada, but fully automated vehicles will not be deployed for another ten to twenty years, or more.[45] The Canadian government anticipates reduced road accidents, reduced emissions and safer roads after automated vehicles are in widespread use.[3][46]

Autonomous vehicles can also provide better access to transportation to people living in underserved communities and people with disabilities.[47] Serving remote communities with driverless vehicles can also help economic growth by facilitating access to more populated city centres.[48]

Fully autonomous vehicles that do not require human intervention may be even safer than partially autonomous vehicles because they will eliminate accidents caused by human error.[49] However, they may shift the scope of liability away from the human operator. To a certain degree AI used in automated vehicles has some person-like characteristics because it can directly impact individuals and property, through suggestions or direct-action, and their behaviour is not entirely predictable.[50] The behaviour of AI is determined by the programmed learning algorithms which allow some degree of internal agency to achieve its goals. While AI is somewhat deterministic, meaning their outputs are defined by inputs to the software, the complexity of the learning algorithms make the "reasoning" behind decisions almost impossible to discern, even by

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[44] Mark A. Geistfeld, "A roadmap for autonomous vehicles: State tort liability, automobile insurance, and federal safety regulation" (2017) 105 Cal L Rev at 1625.

[45] Canada, Policy and Planning Support Committee, *Automated and Connected Vehicles Policy Framework for Canada*, (Working Group on Automated and Connected Vehicles, January 21, 2019) at page 2.

[46] *Ibid* at 1.

[47] Alexandra Cutean, *Autonomous Vehicles and the Future of Work in Canada*, (Information and Communications Technology Council (ICTC), 2017) at page 5.

[48] *Ibid.*

[49] Pinchas Huberman, "A Theory of Vicarious Liability for Autonomous-Machine-Caused Harm" (2021) 58:2 Osgoode Hall LJ at 237.

[50] *Ibid* at 236.

the original programmer.[51] Due to this inherent untraceability, there is some loss of control by the manufacturer when an automated vehicle is released.  Under the current system, a driver who rear ends another car is held liable. Users of fully automated cars will not likely be held liable for accidents that occur while they are in the car. But if that is the case, then who should be liable?

Key Issues

1. Should AI powering automated vehicles be granted legal personhood in Canada so we can hold them liable for their legal wrongs?
2. How should we approach liability issues of not fully automated vehicles?
3. If AI is not granted personhood, who should be liable between the human operator, the manufacturer, and the developer?
4.  Will AI personhood be used to avoid legal liability?

AI Transportation in Canada

Canada has not yet adopted concrete legislation addressing the liability and legal personhood issues of automated vehicles.[52] However, working groups in Canada have proposed different approaches. For instance, in 2016, the Ontario Ministry of Transportation launched a ten-year pilot program to test automated vehicles on roads. Their policy states that human drivers are ultimately responsible for control of the vehicle.[53] This suggests that if accidents occur, the driver will be held liable for failing to take control of the vehicle. Meanwhile, Transport Canada (TC) likely wants manufacturers to be held liable for safety concerns regarding automated vehicles. It wants automated vehicles to improve overall road safety.[54] Therefore, as the hope is to improve road safety, it seems that TC wants automated vehicles to be safer than human-operated vehicles. Holding manufacturers liable for incidents on the road would contribute to TC's objective. If manufacturers were able to dodge liability by blaming the AI inherent in the automated vehicle, then it would reduce the manufacturer's incentive to design a safe vehicle.

AI legal personhood is not likely to be implemented in Canadian law because it may allow humans guilty of tortious or criminal conduct to avoid liability. For example, negligent AI developers for automated cars may avoid liability by claiming a collision was caused by

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[51] *Ibid* at 236.

[52] Alex Ross, "Autonomous Vehicles in Canada: Are Liability Rules Being Affected by Horses, Elevators and Autopilots?", *Gowling WLG* (July 16, 2019).

[53] *Ibid.*

[54] Canada, Transport Canada, *Canada's Safety Framework for Automated and Connected Vehicles*, (Department of Transport Canada, February 2019) at page 2.

the AI.[55] The Canadian government would rather attribute liability to humans guilty of tortious and criminal conduct rather than an AI. However, given that AI will serve to disrupt the current scheme of liability in automobile accidents it may be desirable for the Canadian government to look at adopting a no-fault scheme for personal injury negligence compensation. This is the approach taken in New Zealand, and if adopted in Canada it could serve to reduce drivers' fears that now they will be on the hook financially for AI mistakes as well.[56]

The following are questions that should be a priority for policy-makers/legal academics to answer in order to effectively address the issues identified above:
1. Should the court attribute damage costs between the driver and manufacturer differently depending on the AI vehicle's level of automation?
2. If AI legal personhood were implemented into Canadian law, who would ultimately provide compensation to the plaintiff in cases where the AI is held liable?
3. How feasible is it for Canada to implement the New Zealand model to tort liability and what impact could that have on the adoption of AI in transportation?

Courts can make some of these decisions when they deal with litigation involving automated car accidents.[57] The legislature also needs to set new default rules. Perhaps the user of the automated car will be fully liable, or it can be divided between the user and the designer.[58] Automated vehicles will certainly change the transportation landscape in Canada. As a country with a great dependence on cars, automated vehicles offer solutions to transportation problems introduced by human error. Consequently, the Canadian legal system must be prepared to handle the inevitable liability issues that will arise.

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[55] Lance Eliot, "AI Legal Personhood Distresses AI Ethicists Since People Could Deviously Scapegoat Machines To Avoid Apt Human Responsibility, Including In The Case Of AI-Based Self-Driving Cars", *Forbes* (March 4, 2022) at Self-Driving Cars and AI Legal Personhood.
[56] Matthew Bartlett, "How does the Tort of Negligence Affect my NZ Business?" (23 March 2021), online: *LegalVision* <https://legalvision.co.nz/disputes-and-litigation/how-does-the-tort-of-negligence-affect-my-business/>.
[57] George Maliha, "To Spur Growth in AI, We Need a New Approach to Legal Liability", *Harvard Business Review* (July 13, 2021) at Revamping the Rules: Changing Liability Defaults.
[58] *Ibid.*

**Innovation Domain**

This section examines the implications of recognizing AI as inventors (under patent law) and authors (under copyright law). There exist machines that generate songs, scripts, and paintings with no human input, as well as systems like DABUS that generate novel inventions using its own cumulative experiences. Jurisdictions around the world have generally refused to recognize AI systems as inventors. As of now, there is only one example of AI being recognized as an artist by any court.[59] While there are some differences between arguments surrounding patent and copyright, they both hinge on the same point—the "human" aspect of both an inventor and an author is (as the law stands now, at least) a defining feature.

High-level overview

The two factors needed to establish copyright protection (originality and authorship) pose a problem for recognizing AI as an author. Originality requires creativity,[60] subjectivity, skill and judgment, and authorship (as the law stands) requires a human author.[61] In recent years, AI machines have generated human-like singing, written award-winning films, and created "paintings" worth half a million dollars.[62] ChatGPT, an open-access text generator became a cultural phenomenon in late 2022, writing poems, recipes, and essays (as just a few examples of a vast capability) based on simple prompts. The case law from around the world may assert that a human author is a requirement for a work to be copyrightable, but it is still unclear whether in the future AI could have enough human-like characteristics to be an author. Likely, in future AI-related copyright claims, courts will have to contemplate the question: what defines a human? India recognized an AI-machine as a co-author of a painting, which could indicate flexibility on the human requirement in the future.

Regarding patent applications for AI generated inventions, the current leading challenges are being brought forward by Dr. Thaler, creator of an artificial intelligence system responsible for generating inventions. Dr. Thaler has submitted patent applications to various jurisdictions around the world on behalf of DABUS as the named inventor with varying results. Patent offices around the world that undertake substantive examinations of applications have generally denied that machines such as DABUS can

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[59] In India, RAGHAV Artificial Intelligence Painting App was registered as co-author (alongside its owner) of the painting "Suryast."
[60] *Feist Publications, Inc. v Rural Telephone Service*, 499 U.S. 340
[61] CCH Canadian Ltd. v Law Society of Upper Canada, supra note 1, cited by A Consultation on a Modern Copyright Framework for Artificial Intelligence and the Internet of Things at page 12.
[62] Florian Martin-Bariteau and Teresa Scassa, *Artificial Intelligence and the Law in Canada* (Lexisnexis Canada, 2021) at page 4.

qualify as inventors.[63] The key issue on which these decisions turn is the requirement for inventors to be "natural persons", which typically has not been found to include machines. The fundamental underlying question of whether this requirement should be changed depends on whether doing so would fulfil the underlying goals of promoting technological innovation and fostering economic growth.[64] Some issues under debate include creating financial incentives to drive AI systems that create useful inventions and concerns about patents granted to parties that are arguably undeserving, as the invention was produced by AI instead of the person themselves.

<u>Innovation and AI in Canada</u>

In light of these worldwide developments, the Canadian government released a document titled *A Consultation on a Modern Copyright Framework for Artificial Intelligence and the Internet of Things*—an attempt to get out in front of these issues surrounding recognizing AI as authors under the Copyright Act. The Copyright Act does not define author, but Canadian case law emphasizes that human is a necessary factor (the act refers to "life and death," for example). Moral conversations surrounding the rights of human artists have become salient in light of recent open access and exploding popularity of text-to-image models like DALL-E, DreamBooth, and Stable Diffusion, with some models even being trained on specific artists' work.[65] Artists are calling for copyright law to adapt to this new era of AI and better protect their work and livelihood.[66] In a submission from 14 Canadian IP scholars to the federal government, they state that existing copyright law in Canada has the capability to answer questions posed by AI development. Creating a new type of legal personhood for AI in this field would disrupt the balance of protection for artists and public access to creative works.

In Canada, the Canadian Intellectual Property Office (CIPO) sent Dr. Thaler a compliance notice, stating that s.27(2) of the Patent Act and s.54 of the Patent Rules require patent applications to be filed by an inventor or the legal representative of an

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[63] Kingsley Egbuonu, "The latest news on the DABUS patent case" (28 February 2023),online: <https://www.ipstars.com/NewsAndAnalysis/The-latest-news-on-the-DABUS-patent-case/Index/7366>

[64] Canadian Intellectual Property Office, CIPO Mandate, (13 January 2019).

[65] Andy Baio, "Invasive Diffusion: How one unwilling illustrator found herself turned into an AI model" (Waxy, November 1, 2022) <https://waxy.org/2022/11/invasive-diffusion-how-one-unwilling-illustrator-found-herself-turned-into-an-ai-model/>

[66] See: Chris Hannay, "Artist faces lawsuit computer system that randomly generates images" (Globe and Mail, October 3, 2018) <www.theglobeandmail.com/arts/art-and-architecture/article-artist-faces-lawsuit-over-computer-system-that-creates-randomly/>; Songwriters Association of Canada. "Comments on the Consultation on a Modern Copyright Framework for Artificial Intelligence and the Internet of Things." (Date unknown), online: <https://ised-isde.canada.ca/site/strategic-policy-sector/en/marketplace-framework-policy/copyright-policy/submissions-consultation-modern-copyright-framework-artificial-intelligence-and-internet-things/songwriters-association-canada-sac>

inventor.[67] CIPO found that the issue was two-fold: (1) the named inventor was a machine which was impermissible, and (2) in the absence of machine's having rights under Canadian law or the ability to transfer rights to a human, DABUS could not assign the invention. As the application was not legally filed by an inventor or legal representative, the application did not comply with the Patent Act and the Patent Rules.[68] However, Dr Thaler was given the opportunity to comply by submitting a statement identifying himself as the machine's legal representative. This process is currently underway.

The following are questions that should be a priority for policy-makers/legal academics to answer in order to effectively address the issues identified above:

1. Are the "artistic" products of AI worthy of copyright protection? Do they meet the definition of "creative"? If AI is recognized as an artist or author capable of holding copyright, how will that affect the livelihood of human artists, in turn affecting the cultural landscape of Canada? How can Canada strike a balance between these potential negative effects and the desire to foster innovation?
2. Based on the Supreme Court of Canada's Statement in *Free World Trust v. Électro Santé Inc.* that the "patent system is designed to advance research and development and to encourage broader economic activity", will allowing AI inventors to be granted patents promote the growth of technological innovation in Canada by creating a financial incentive?[69] If so, who should receive the benefits of the patent?

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[67] Canadian Intellectual Property Office, *Canadian Patent Document 3137161 - Office Letter* (8 November 2021), online: <https://www.ic.gc.ca/opic-cipo/cpd/eng/patent/3137161/summary.html>.
[68] *Ibid.*
[69] Free World Trust v Électro Santé Inc, [2000] 2 SCR 1024 at para 42.

**Economic Domain**

AI systems are increasingly being employed in contract law, business transactions, and hiring decisions settings. The rise of these new and constantly evolving technologies begs the question: is the existing legislation (both statutory and common law) that currently governs these economic domains up to the task of adequately regulating AI? One possible response to the increasing prevalence of AI systems is to confer upon them legal rights and duties, or *legal personhood*, in a similar fashion to the existing treatment of corporate entities.

Key Issues

1. Can AI enter into contracts? Does AI constitute a legal entity like individuals or corporations?
2. Who are the parties to contract when it comes to AI actors and who bears responsibility for contract breach? Does the meeting of minds necessary for offer/acceptance pose a problem in AI contract management contexts?
3. What are the implications of using AI to make hiring decisions? Who bears liability for legal conflicts that arise with using AI for hiring, such as the case of biased hiring?

Economics and AI in Canada

Canadian contract law arguably embraces automation in a seamless way because Canadian legal rules provide leeway for technological change and independence. Arguably concerns over a "meeting of the minds" are not relevant in the AI contract-making process because the Canadian legal and statutory framework already allows for electronic offer and acceptance.[70] The Civil Code of Quebec, for example, provides that a contract forms, where there is offer, acceptance, consideration and certainty, "regardless of the method of communication used for acceptance of the offer."[71] The Electronic Transactions Act explicitly allows for contracts to form between electronic agents and natural persons, or between electronic agents.[72] In other words, Canadian law has bypassed the question of whether a contracting AI is a legal person, since it has authorized machines to enter into contracts, without formally recognizing its legal personhood. This approach has been echoed on the international stage, where

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[70] Martin-Bariteau, Florian and Pavlovic, Marina. "Artificial Intelligence and the Law in Canada" (February 1, 2021) in Florian Martin-Bariteau & Teresa Scassa, eds., *Artificial Intelligence and the law in Canada* (Toronto, Ontario: LexisNexis Canada, 2021).
[71] *Civil Code of Québec*, C.Q.L.R., c. CCQ-1991, art. 1387. Though note that the Civil Code of Quebec employs civil law, which has slightly different rules for contract formation than the common law.
[72] *Electronic Transactions Act*, S.B.C. 2001, c. 10; see also *Thornton v Shoe Lane Parking Ltd* [1970] EWCA CIV 2 for a traditional common law treatment of automated contract formation.

several leading cases have avoided granting legal personhood to AI by treating them as an extension of their human users in contract formation.[73]

Strong social justice arguments buttress the view that Canadian courts should not grant legal personhood to AI actors. Using AI actors to manage contracts may result in relationships where there are power imbalances. Cases like *Douez v. Facebook* and *Uber Technologies Inc. v. Heller* arguably highlight instances of this forewarned exploitative behaviour.[74] Similarly, consumers can sometimes agree to terms without being aware that an agreement is being made. This gives rise to the possibility of consumers, unaware of hidden terms and conditions, entering into exploitative contracts.

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[73] See, for example, *Chwee Kin Keong and Others v Digilandmail.com Pte Ltd [2005]* 2 LRC 28l; *Software Solutions Partners Ltd, R (on the application of) v HM Customs & Exicise [2007] EXHC 971*.
[74] 2017 SCC 33 [*Douez*]; 2020 SCC 16 [*Heller*].

**Looking Ahead**

It is clear that the regulation of AI may look differently in various industries. However, there are common pitfalls that regulators need to be made aware of. For instance, biases in AI have the potential to exacerbate socio-economic differences in many fields from healthcare to the arts to wealth management. Another common thread throughout these various industries is quality control; will AI be able to protect consumers effectively in these sectors when there could exist potentially perverse incentives for AI manufacturers to cut corners? Regulators must be aware of these considerations as they seek to craft a balance between the costs and benefits of AI.

This report focused on generating a robust analysis of AI personhood and should only be one piece of research in the overall discussion. Indeed, for a holistic discussion, one would need to consult all the ways in which AI improves efficiency and safety. Furthermore, the discussions surrounding the pitfalls of AI implementation should not be viewed as stagnant. AI can, and should, improve greatly with time both computationally but also in generating fair and equitable outcomes. However, it is important to clearly articulate and address the pitfalls of AI if humanity is to realize its benefits. This is why the power of lawyers, policy-makers, and researchers cannot be overemphasized. Whilst this may appear hyperbolic on its face, researchers such as University of Toronto Professor Geoffrey Hinton have already expressed concern about AI exceptional learning abilities and its ability to eclipse the cognitive abilities of humanity.[75]

While we do not explicitly provide a recommendation for regulators on whether or not to recognize legal personhood, regulators ought to provide a holistic, well-reasoned approach that fits in well with a robust AI regulation strategy. Otherwise, humanity is merely gambling that things work out.

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[75] Adrian Humphreys, "Toronto prof called 'Godfather of AI' quits Google to warn world about the dangerous technology", *National Post* (2 May 2023), online: <https://nationalpost.com/news/canada/geoffrey-hinton-godfather-of-a-i-quits-google>.