Brief to the House of Commons
Standing Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities

regarding

Implications of Artificial Intelligence Technologies for the Canadian Labour Force

María Sierra Cordoba Serrano
Golnoosh Farnadi
Eric D. Kolaczyk
Satu Elisa Schaeffer
Carola Weil

On behalf of the
McGill Collaborative for AI & Society (McCAIS)
And the School of Continuing Studies
McGill University

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SUMMARY

As both a major Canadian employer and a source of significant, nationally, and internationally funded research on and development of artificial intelligence (AI), as well as a major contributor to workforce development and training, McGill University offers a set of seven (7) inter-related recommendations to advance effective and ethical integration of AI into Canadian labour markets leveraging the resources and capabilities of universities. These range from supporting the training, up-, co- and reskilling Canadian workers at all career stages and in a wide range of fields to leveraging universities like McGill University to convene the many different key stakeholders for the purpose of coherent, cross-cutting policy development and reviews. Of particular concern is the impact of AI on marginalised populations as well as the need for policy responses that are flexible AND sustained. McGill University calls on policy makers to actively engage with universities in examining and shaping the impact of artificial intelligence on the Canadian labour force in a multi-dimensional manner to ensure ethical applications of AI and an informed and future ready workforce prepared to effectively work with AI.

I. INTRODUCTION

McGill University is pleased to contribute to this important discussion on the implications of artificial intelligence (AI) for the Canadian labor force. Universities, such as McGill University, constitute both a major employer and a pathway in and through the Canadian workforce. McGill University is home to more than 12,000 full and part-time employees and 39,000 full and part-time students in the heart of Montreal, QC. It is a major economic driver, injecting both significant tax revenues as well as direct and indirect consumer investments into the local, provincial, and federal economy.

More importantly to this discussion, McGill University and other research universities are key contributors to an AI-driven economy through their research and development (R&D) and teaching activities. They also are directly affected by the workforce implications of artificial intelligence, as major loci, and sources of 'knowledge workers' and professionals. A 2020 Statistics Canada report estimated that approximately 40% of Canadian workers were at moderate to high risk of 'automation related job transformation'.

This does not necessarily mean loss of jobs but rather significant disruptions to cognitive-based jobs and a major need for retooling, up-/ and re-skilling of predominantly white-collar workers. As Canadian economist Armine Yalnizyan recently noted, " [t]here is an urgent need for 25- to 54-year-olds in particular to learn how to work with this technology".

Artificial intelligence and the accompanying digital transformation have had and will continue to have differential impacts on the Canadian workforce. While most sectors and professions already face direct or indirect changes because of AI, the effects vary and can be both positive and negative. Responsible and ethical AI offers significant advantages and opportunities for workforce development, including in how university communities teach, learn and work, but not without risks.

The consulting firm PriceWaterhouseCoopers LLP (PWC), in their *Generative AI and Canadian businesses: Why a holistic approach is key to harnessing the disruptive potential of this fast-changing technology.* (2023), pointed out that these impacts will not only disrupt but also augment the way in which we work. As described in a chart on the estimated impact of generative AI by role types (p. 5), professionals in educational services and applied sciences, paraprofessionals, middle management in trades, and support workers in food, accommodations and food industries will be both the most impacted but also the most benefited by AI.

Universities such as McGill University are uniquely positioned to address both sides of this technological revolution through innovative research and practical applications in responsible and ethical AI, as well as through the core competencies of analytical skills, intellectual agility, and critical thinking that post-secondary institutions seek to impart to their students.

McGill University also addresses what Scale AI recently termed Canada's 'Achilles Heel'—the gaps in human capital and technological infrastructure needed to keep the Canadian economy and labor force competitive: "Diffusion is Canada's weakest link of the AI Innovation Value Chain but is the key to the long-term survival/development of a strong AI industry."[1] The McGill University School of Continuing Studies together with the University's Computational and Data Systems Initiative is working to train the broader workforce to understand and effectively integrate AI into everyday work in a responsible and ethical manner, and to create a broad-based culture of responsible AI.

Through undergraduate and graduate credit programs as well as shorter professional development certificates and workshops, delivered online and in person, McGill University is already contributing to a more informed and adaptive community of lifelong learners and AI-ready labor force. McGill University is working closely with public and private sector organizations to ensure that today's employers and members of the workforce have the analytical and technical tools and mindset necessary for greater resilience in an AI powered economy. Equally important, the University seeks to do so while mitigating the potential for social inequity, by ensuring that the benefits of AI are equally distributed, and that individuals regardless of socio-economic status or background can take part actively in this economy.

A recent report by Policy Horizons Canada on the Future of Generative AI (Aug. 2023) identified several specific labour market impacts that McGill University and other universities are already actively addressing: The impact of generative AI on creative and language-based work, and its augmentation of technical and knowledge work; the potential wage reductions and lay-offs that may occur as a result of the automation of many technical coding tasks of "what were once considered 'highly-skilled' tech jobs", and the increase in liability due to "privacy violations or errors in judgment", among other effects. These are not isolated impacts but rather part of an emerging ecosystem in which artificial intelligence weaves through the entire fabric of human society. We must therefore approach the challenges posed by AI holistically.

To ensure that we can maximize the positive implications of AI while minimizing the negative impacts, McGill University recommends that the Government of Canada issue guidance and provide financial support for the following workforce development measures.

II. RECOMMENDATIONS

- Actively support **universities as convenors of AI policy discussions that** engage with AI leaders of different/relevant industries and sectors to address pressing questions at the crossroads of technology, policy and society. As noted above universities play a critical role not only in the research and development of AI ideas and solutions, but also in the diffusion of AI and the practical applications for AI throughout the workforce. As major employers themselves, universities such as McGill University, must themselves grapple with the

[1] Scale AI. Report: "AI at Scale: How Canada can Build an AI-Powered Economy". March 2023, p. 27.

implications of AI for their own workforce and workflows in and out of the classroom. Through this dual role, universities are key stakeholders in policies addressing AI in the workforce.

- **Actively leverage and support universities as convenors and incubators of practical knowledge and skills applications of AI in the workplace** by educating and training CEOs and managers, as well as of the general labor force through various forms of short programs as well as more formal credentials, including degree programs.

- Ensure the availability and promotion of (at least) bilingual, multimodal and multichannel learning materials to **increase awareness and a basic understanding of how AI works**. Adapted for all age groups, these learning materials should be publicly accessible (at no cost), regularly updated and written in plain language. Such documentation/self-directed learning modules should also provide a realistic assessment of the potential benefits, risks, and limitations of introducing AI applications in society.

- Ensure the availability of **flexible, part-time, modular, at least bilingual training modules** that prepare different echelons of the Canadian workforce to assess the development costs, needed data, possible sources of bias, security, and privacy issues as well as ethical and regulatory implications of AI adoption.

- Expand the range of **financial incentives for employers to provide educational benefits** to their employees for the purpose of up-/re-skilling in the mathematical and computational foundations as well as the social and ethical implications of AI at all educational levels so that members of the workforce are properly equipped and informed to contribute to the future of AI.

- Provide funding to support **continuous and adaptive teacher training** in the mathematical and computational foundations as well as the social and ethical implications of AI to ensure continued relevance of course content in a rapidly evolving technological and socio-economic context.

- Establish **scholarship or bursary funds for part-time adult learners wishing to up-/co- and re-skill** at post-secondary levels in areas of multilingual communication technologies, including multilingual AI, applied machine learning, and other forms of non-technical and technical acquisition of AI skills and knowledge. We recommend a focus on population groups at greatest risk of marginalization, including but not limited to members of underrepresented, underserved demographic groups, digitally disadvantaged language groups, women returning to the work force, and older workers who may need to continue to work past retirement age.

III. INSTITUTIONAL PROFILE: MCGILL COLLABORATIVE FOR AI & SOCIETY (MCCAIS) & THE MCGILL UNIVERSITY SCHOOL OF CONTINUING STUDIES

Founded in 1821, McGill University is home to exceptional students, faculty, and staff from across Canada and around the world. It is consistently ranked as one of the top universities, both nationally and internationally. It is a world-renowned institution of higher learning with research activities spanning three campuses, 12 faculties, including the School of Continuing Studies, 14 professional schools, 300 programs of study and over 39,000 students, including more than 10,400 graduate students.

McGill Collaborative for AI & Society

McGill University has tremendous strengths in many aspects of AI and already is contributing – and often leading – in this space in many ways. The *McGill Collaborative for AI & Society (McCAIS)* serves as a mechanism for the university to bring a critically needed holistic approach to the many challenges and opportunities where AI and Society meet, by facilitating strategic integration of McGill's various distributed strengths around the AI/Society interface, in both research and education. This model in turn optimizes McGill's ability to partner collectively and in a responsive manner with major local, national, and global groups and organizations engaged in similar endeavors. McCAIS efforts focus broadly around four key pillars:

- **Thought Leadership:** Elicit and distill for public consumption - in an agile and accessible fashion - the thoughts, ideas and reactions of experts at McGill and beyond on emerging topics at the intersection of AI and Society.
- **Research to Action:** Support researchers in converging and collaborating on multidisciplinary teams, to address topics central to the intersection of AI and Society. Emphasis on aiding teams in navigating the various stages of transition from research to action.
- **Experiential Learning:** Augment what students obtain through traditional learning, in their courses and degree programs, with a rich, complementary ecosystem of experiential learning opportunities at the intersection of AI and Society.
- **Lifelong Learning:** Build out a spectrum of educational mechanisms – for both internal and external audiences – to support learning around development and adoption of AI ethically and responsibly in society.

McGill University School of Continuing Studies

For over 50 years, the McGill School of Continuing Studies (SCS) has been an incubator for innovative approaches to adult learning and teaching, emerging areas of practice, applied research, and future-ready workforce development in Quebec, Canada and around the world.

We educate, empower, and equip learners with in-demand and emerging professional skills, broader knowledge, and adaptive mindsets through experiential and work-integrated learning, applied research, and support services for adult learners, such as academic and career advising.

Our learning solutions are offered part- and full-time, both in-person and online, and include comprehensive undergraduate, graduate, and professional development certificates, micro-credentials, workshops, self-directed learning, and other upskilling/reskilling opportunities.

A major focal point for the School of Continuing Studies is the impact of digital transformation on a range of professions and fields relevant to Canada's and the global knowledge economy.