The Canadian AI Ecosystem: A 2018 Profile

Green Technology Asia Pte Ltd
Introduction

Profiling the Canadian AI Ecosystem

The following report has been prepared by the research team of Green Technology Asia Pte Ltd. The research was carried out over several months in late 2017, and represents the most recently available snapshot of AI activity in Canada.

The research included interviews and in depth analysis of 297 of Canada’s AI companies, researchers and research institutes. It will provide industry, policy makers, investors, and researchers with valuable insights and details on Canada’s AI sector.

The report outline and summary are available for download free of charge. More detail, including databases, competitive analyses, as well as opportunities for bespoke studies are available for sale. For further interest and inquiries on pricing please contact us as info@greentechasia.com.

A second report ‘Opportunities for AI in Asia’ is currently in preparation. This will include details on the state of play of AI and the major players in key Asian markets, as well as strategies for market entry. This is largely aimed at participants in the Canadian AI sector, but should be of interest to any AI player. To receive updates on the report please register your interest through our website at info@greentechasia.com

Our Team and Acknowledgements

We extend our deepest gratitude to the many busy and kind individuals we interviewed over the course of producing this report.

Researched and written by GTAsia team Brady William Fox (lead researcher), Denea Bascombe, Sonia Takhar, with contributions from Chad Rickaby.

D. Wynne editor.

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Canada’s artificial intelligence revolution presents tremendous opportunity to translate an early lead into a key 21st century industry. It is primed to make major contributions to an international fourth industrial revolution and create significant economic rewards.

The value proposition for Canada’s emergent research hubs and private firms largely comes from the talent attached to them. These experts form the connective tissue of innovation across the country. This is also what ensures the sustainability of Canada’s ecosystem; Canada’s leading experts in artificial intelligence, including Yoshua Bengio, Geoffrey Hinton, Richard Sutton and their teams, are invested in translating their local network into a lasting innovation ecosystem.

The recent boom in AI in Canada was facilitated by a critical mass of research and entrepreneurship by these and other experts. Much of this was built over decades through support from government institutions such as the Canada Institute For Advanced Research and collaboration between universities. A core strength of Canada’s AI ecosystem is its highly collaborative nature across academia and the private sector.

The challenges to this nascent industry tell a familiar story in Canada; fear of brain drain, difficulty acquiring late-stage venture capital, and disparate opportunities across the country are some of the major concerns. But the commitment of Canada’s top talent to building AI hubs in Canada and the collegial nature of the industry present an opportunity to avoid these pitfalls with adequate public and private partnerships.

Canada also benefits from its international reputation and culture. A sense of social conscience is a common thread among AI entrepreneurs and researchers, who are building technology to change the world. Canada offers both professional opportunity and a like-minded community.

Risks abound, however; as resources are concentrated in Montreal and Toronto, it will be an ongoing challenge to support second-tier centres such as Vancouver or Edmonton. More remote regions face even more challenges. Public dialogue on artificial intelligence is limited and often filled with misconceptions. AI solutions will bring significant job displacement, which disproportionately affects on women, on low and medium-skilled wage-earners, and on certain communities. Codes of conduct for AI development and application are still largely informal; little progress has been made on the regulatory front at either the national or international level.

But the landscape in Canada provides ample opportunity to explore solutions to these problems alongside supporting the artificial intelligence boom. Early success has presented to opportunity to cement its place as a global artificial intelligence leader for decades to come.
Building a National Profile

The artificial intelligence industry in Canada is concentrated in a few urban centres. We focus on the 5 centres of Montreal, Toronto, Edmonton, Waterloo, and Vancouver. Approximately 10% firms examined operated outside of these cities.

Montreal and Toronto are the most important cities. Edmonton is a significant research centre but faces difficulties due to isolation relative to Canada's largest cities. Vancouver is home to a significant number of firms and has deep connections to Silicon Valley, Seattle, and East Asia, but lacks in research support. Waterloo is a major research centre in its own right but relies on its proximity to Toronto and other centres.

Distribution of Firms Across Canada

The distribution of firms active in AI across Canada mirrors the respective strength of parallel industries such as information technology, film and television, and academic research. Vancouver has a large concentration of private firms relative to research, while others such as Edmonton and Waterloo are primarily research centres with less private enterprise. Toronto and Montreal emerge as truly international-quality centres for AI development; we predict that their share of total firms will increase significantly in from 2018-22.

Strengths vary by region. The Pan-Canadian Artificial Intelligence Strategy will provide additional assistance to each of these regions but is unlikely to cause any fundamental change in the current dynamic; regional differences remain significant. The Canadian AI ecosystem is better understood through regional profiling.
International Hubs: Toronto and Montreal

Toronto

Toronto has the largest concentration of AI firms in Canada. We estimate at least 150 startups and established firms exploring applications for AI across a broad range of industries. Of the 297 firms we examined closely, 115 had their headquarters in Toronto. Toronto’s AI sector is buoyed by a strong academic history, an established tech industry, proximity to key industries such as finance, and government support for development of AI as an industry.

Toronto’s AI Ecosystem

<table>
<thead>
<tr>
<th>Firms</th>
<th>115+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notable Firms</td>
<td></td>
</tr>
<tr>
<td>Integrate.ai, Crowdcare, Cyclica, Ideal, Naborly, Iceberg, Layer 6, Deep Genomics, Blue J Legal, Mindbridge.AI</td>
<td></td>
</tr>
<tr>
<td>Top 5 Industries for AI</td>
<td>Marketing, Health/Pharmaceuticals, Human Resources, Customer Service, Fintech</td>
</tr>
<tr>
<td>Research Labs and Support</td>
<td>Vector Institute, Borealis AI (RBC), Canada Institute for Advanced Research (CIFAR), Toronto Department of Computer Science Innovation Lab (DCSIL)</td>
</tr>
<tr>
<td>Key Individuals</td>
<td>Geoffrey Hinton, Brendan Frey, Steve Irvine, Russ Salukhtinov, Fabien Bacchus, Alan Bernstein, Elissa Strome, Graeme Hirst, Hector Levesque</td>
</tr>
<tr>
<td>Key Government Programs</td>
<td>100 million CDN, Vector Institute, (Ontario + Federal) + $80 million from private firms</td>
</tr>
<tr>
<td>Other Notable Programs</td>
<td>NexAI, AI Toronto</td>
</tr>
</tbody>
</table>

Montreal

Montreal is a major hub for artificial intelligence research, boasting the world’s largest concentration of AI researchers, with a large and growing commercial scene. In addition to 80+ startups and already established AI firms, including the preeminent Element AI, Montreal has several notable research hubs. It is home to some of Canada’s most well-known figures such as Yoshua Bengio.

Montreal’s AI Ecosystem

<table>
<thead>
<tr>
<th>Firms</th>
<th>57+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notable Firms</td>
<td></td>
</tr>
<tr>
<td>Element AI, Fluent AI, Automat, Facebook, Imagia, Nuance, Google, Keatext</td>
<td></td>
</tr>
<tr>
<td>Top 5 Industries for AI</td>
<td>Marketing, Customer Service, AI-as-a-service, Social Media, Health/Pharma</td>
</tr>
<tr>
<td>Research Labs and Support</td>
<td>Montreal Institute for Learning Algorithms, Deepmind, CortAIx, FAIR Montreal, Borealis AI</td>
</tr>
<tr>
<td>Key Individuals</td>
<td>Yoshua Bengio, Jean Francois Gagne, Pierre Boivin, Guy Breton, Doina Precup, Guy Lapalme</td>
</tr>
<tr>
<td>Key Government Programs</td>
<td>$100 million CDN, 2017 to 2022 to create AI cluster (Quebec Government), $213 million CAD, big data and AI research across 4 Montreal Universities (Ottawa) $97 million CAD to IVADO, 2017-2024, to make Montreal AI hub (Ottawa)</td>
</tr>
<tr>
<td>Other Notable Programs</td>
<td>IVADO, AI Forum, Blue-Chip Committee, Montreal ai, Montreal Declaration for a Responsible Development of Artificial Intelligence</td>
</tr>
</tbody>
</table>
Specialized Hubs: Edmonton and Vancouver

Edmonton

Edmonton is valuable for its connection to Canada's natural resource industries and for the reputation of the University of Alberta, a leader in artificial intelligence research. Dr. Richard Sutton is one of the fathers of AI in Canada, known primarily for his work in computational reinforcement learning, and his essential role in the development of Google's AlphaGo! Program.

Edmonton has both a smaller market and a smaller startup ecosystem than other major Canadian cities, but has impressive research credentials and partnerships with major firms. In 2017 Google announced the opening of Deepmind Alberta, its first international AI research centre.

Vancouver

While central Canada's AI ecosystem is characterized by both competition and overlap between Toronto and Montreal, Vancouver is emerging as a unique West Coast centre for artificial intelligence. Buoyed by parallel industries such as film, IT, and gaming, as well as Seattle, Silicon Valley, and Pacific Rim connections, Vancouver provides unique opportunities and is developing more independently than central Canada.

Vancouver is an entrepreneurial centre first and does not have the concentration of research resources or expertise that characterize other AI hubs in Canada. It nonetheless has a strong start-up ecosystem and significant international connections.

### Edmonton's AI Ecosystem

<table>
<thead>
<tr>
<th>Firms</th>
<th>8+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notable Firms</td>
<td>ATB Financial, Granify, Engineering Beyond, Onebridge, Promethean Labs.</td>
</tr>
<tr>
<td>Top 5 Industries for AI</td>
<td>Energy, Agriculture, Fintech, E-Commerce, Marketing</td>
</tr>
<tr>
<td>Research Labs and Support</td>
<td>Alberta Machine Intelligence Institute, Reinforcement Learning &amp; Artificial Intelligence Lab, Bionic LimbsAlexands for Improved Natural Control Lab, DeepMind Alberta, Borealis AI (RBC)</td>
</tr>
<tr>
<td>Key Individuals</td>
<td>Richard Sutton, Michael Bowling, Patrick Pilarski, Jonathan Schaeffer</td>
</tr>
<tr>
<td>Key Support Programs</td>
<td>$1.6 million Servus Credit Union and University of Alberta Partnership, Deepmind Research Chair</td>
</tr>
<tr>
<td>Other Notable Programs</td>
<td>NexAI, AI Toronto</td>
</tr>
</tbody>
</table>

### Vancouver's AI Ecosystem

<table>
<thead>
<tr>
<th>Firms</th>
<th>64+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notable Firms</td>
<td>Cloudburst, Pathful(Mobify), Kindred, Avglon</td>
</tr>
<tr>
<td>Top 5 Industries for AI</td>
<td>Fintech, Marketing, Media, Human Resources, Health/Pharma</td>
</tr>
<tr>
<td>Research Labs and Support</td>
<td>SFU Big Data Centre, UBC Department of Computer Science, Expa Labs, Vanedge Capital, Creative Destruction Labs</td>
</tr>
<tr>
<td>Key Individuals</td>
<td>Alan Mackworth, Suzanne Gildret, Geordie Rose, Fred Popowich, David Poole</td>
</tr>
<tr>
<td>Key Support Programs</td>
<td>BC Tech Fund, BC Tech Strategy, $2 million Scotiabank Cybersecurity and Risk Analytics Initiative</td>
</tr>
</tbody>
</table>
Waterloo and the Rest of Canada

Waterloo

Waterloo benefits from its proximity to Toronto, Montreal, as well as major AI research centres in the United States such as MIT and the University of Chicago. While a smaller market, The University of Waterloo (UoW) boasts a strong research centre in its own right.

UoW has built strong industry partnerships which feature a robust research in applied AI. Waterloo Artificial Intelligence Institute has partnerships with over a dozen research labs and has produced products and services actively used by many AI firms, such as MioVision (traffic data collection), Clearpath Robotics (autonomous mobile robots), and Kik Interactive (chat application.)

| Waterloo’s AI Ecosystem | Firms | 23+
|--------------------------|-------|------
| Notable Firms | Clearpath Robotics, Opentext, Viv, MioVision, InsightNG, Elucid Labs, Acerta, Emagin |
| Top 5 Industries for AI | Marketing, Home Management, Transportation, Human Resources, Social Media |
| Research Labs and Support | Communitech, University of Waterloo; William G. Davis Computer Research Centre, Artificial Intelligence Group, Vision and Image Processing Lab, Centre for Pattern Analysis and Machine Intelligence, WAVELab |
| Key Individuals | Alexander Wong, Dr. Ming Li, Thouheed Abdul Gaffoor, Farnoud Kazemzadeh, Ning Jiang, Robin Gras |

Rest of Canada: Ottawa, Halifax, Kelowna and more

Canada’s AI ecosystem expands beyond its largest metropolitan centres to include regional tech hubs. Most notable among these are Halifax, Ottawa, Calgary and Kelowna, but AI firms and experts can be found as well in Winnipeg, Regina, and Quebec.

31 out of the 297 firms we examined had their headquarters outside of the major hubs discussed above. Despite the benefits of concentrated industries, artificial intelligence products of such firms face little barriers to market entry, and so success stories appear throughout the country.

| Rest of Canada | Firms | 31+
|----------------|-------|------
| Notable Firms | Invenia (Winnipeg), MindBridge (Ottawa), TwoHat Security (Kelowna), Fundmetric (Halifax), Symend (Calgary) |
| Top 5 Industries for AI | Fintech, Infrastructure, Cybersecurity, Media, Marketing |
| Research Labs and Support | Data Analytics Centre (Ottawa), Dalhousie Faculty of Computer Science, Canada Artificial Intelligence Association |
| Key Individuals | Mohamed Cheriet, Teresa Scassa, Sandra Zilas, Howard Hamilton, Nick Cercone, Stan Matwin, Gord McCalla, Robert Mercer, Daniel Silver |
| Key Support Programs | Canada National AI Research Strategy, $150 million, NextAI, $5.15 million |
Dominant National Themes

Investment Trends in Canada

At least 50 per cent of all active investors in Canadian companies are based in Canada. This highlights a homegrown investor appetite across seed, early and expansionary stages of investments. Later-stage deals are the exception. U.S. investors accounted for 33 per cent at start-up stages, but participate more actively in later stage deals where U.S. based firms accounted for 58 per cent of investors. In the first half of 2017, AI attracted $162M in investments according to PwC Canada. This was the highest amount of funding in Canada in the past 5 years. Global venture capital funding in 2016 grew by $5 billion. A total of 22 deals were made in the first three quarters of 2017, totalling $191-million.

Estimated Market Growth by 2025

By 2025 the market for AI related products is expected to reach $127 billion. The market is ever-evolving and contains multiple applications. Findings through stakeholder engagement reveal that the greatest challenge facing Canadian start-ups is the ability to scale. Investment strategies focus on hatching start-ups and growing them to small and medium sized businesses with early market validations and exponential growth revenue. There is a large disconnect between both private and public sector funding once an SME has chosen to scale. In Canada, capital is also exceptionally impatient. Projects that require large infrastructure and incremental elongated capital are less likely to be realized in Canada. The most popular AI application start-ups in Canada are in the fintech, social and real estate, business analytics, and cyber security sectors.

Canadian firms benefit from privileged access to North American firms and researchers. The west coast of Canada is also strategically placed to access growing

In Canada, the most notable application for AI is healthcare. Canada has its own niche for social health care data and is able to take advantage of opportunities featuring AI application in this industry particularly.

Other sectors which are likely to fuel AI demand over the short-term are customer service, marketing, human resources, fintech, transportation and logistics, manufacturing, social media and energy.

Human Resources are a large potential market for AI services. In 2016 Deloitte survey of Canadian CEOs, only 28% reported using data analytics to find, develop and keep employees versus a 50% average reported from their global counterparts. At the same time, only 21% reported that they were considering the impact of artificial intelligence on future skills needs, compared with a 39% of their global counterparts. A significant portion of the firms we examined were focused on human resources and they absorbed a large portion of 2017 funding. These firms will continue to fuel much of the early industry growth.
Public Sector Developments

The largest development in helping shape Canada as an international AI powerhouse has been cooperation between the public and private sectors. In addition to a more stable political climate and immigration rules, one of Canada’s competitive advantages in AI is the ease of access to medium-sized federal and provincial grants.

In the 2017 Federal Budget, the Government committed $125 million to develop the Canadian AI industry through the ‘Pan-Canadian Artificial Intelligence Strategy’. This funding is broadly based and open to sectors across the board from agriculture to financial services and open to companies of all sizes.

The AI Strategy has four major goals:

1. Increase the number of outstanding artificial intelligence researchers and skilled graduates in Canada;
2. Establish interconnected nodes of scientific excellence in Canada’s three major centres for artificial intelligence in Edmonton, Montreal and Toronto-Waterloo;
3. Develop global thought leadership on economic, ethical, policy and legal implications of advances in artificial intelligence; and,
4. Support a national research community on artificial intelligence.

Canadian AI Firms by Industry

Of the 297 firms we examined, the leading industries for Canadian AI are marketing, Fintech, health/pharmaceuticals, human resources, and social media. 34% (101) of firms profiled were building AI solutions for these industries.

This distribution reflects the current market for artificial intelligence solutions; machine-assisted mass text and big data analysis drove adoption in 2016/17 and continue to drive the current boom. But we also found Canadian AI firms active in dozens of fields ranging from education to agriculture.

<table>
<thead>
<tr>
<th>Top 15 Industries for Canadian AI by Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing</td>
</tr>
<tr>
<td>Fintech</td>
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<tr>
<td>Health/Pharmaceuticals</td>
</tr>
<tr>
<td>Human Resources</td>
</tr>
<tr>
<td>Social Media</td>
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<tr>
<td>Customer Service</td>
</tr>
<tr>
<td>Lifestyle</td>
</tr>
<tr>
<td>Media</td>
</tr>
<tr>
<td>AI-as-a-Service</td>
</tr>
<tr>
<td>Cyber Security</td>
</tr>
<tr>
<td>Energy</td>
</tr>
<tr>
<td>Law</td>
</tr>
<tr>
<td>Manufacturing</td>
</tr>
<tr>
<td>Sports</td>
</tr>
<tr>
<td>Other (less than 4 firms reporting)</td>
</tr>
</tbody>
</table>

While the impact of artificial intelligence is well covered in the largest markets, there are firms seeking to sell solutions across the economy. Of particular note is the emergence of AI-as-a-service firms, of which Element AI is most famous for raising over $100 million in funding in the summer of 2017. The value proposition of “AI-as-a-service” firms is their concentration of talent rather than a specific product. This model will likely increase in popularity over the coming years, and Canada’s firms serve as a model for the world.
Reflections on Interviews with Canadian AI Leaders

We conducted anonymous interviews with leaders from major Canadian AI research centres and firms. From these interviews numerous dominant themes emerged:

Cautious Optimism

Recent breakthroughs in AI are exciting and new. However, for many researchers, it represents the end of decades struggle to acquire funding and support for research. Senior experts lived through the ‘AI Winter’, a long period of disillusionment and lack of resources for AI research from the 1960s onward. As such the current advancements, while sound, are met with some caution from academics, who have for decades faced difficulty finding resources and support.

Codes of Conduct and Ethics

Codes of conduct and ethical questions were central to the discussion with many experts. These discussions are currently low priority for policymakers, despite their importance. There was a near-universal message that development of regulations and codes of conduct need input from those inside and outside of the artificial intelligence community. This also provides an opportunity to educate on artificial intelligence.

Public Education

Education on the practical implications of AI on society was seen as important to all experts interviewed. Misunderstanding among the public about the nature and capabilities of artificial intelligence was a consistent concern. This extends to misunderstandings over the risks AI presents and its likely social impacts.

Importance of Overlapping Private-Academic Cooperation

There is a strong overlap between academic and professional networks within the Canadian AI ecosystem. The majority of entrepreneurs are also students or professors at Canadian universities, or contribute to academia in some other fashion such as the Canada Research Council. AI leaders are reliant on these connections for recruiting talent, developing product, and building their professional networks.

Regional Disparity

The influx of investment and interest in Canada is largely concentrated in Toronto and Montreal. Outside of these centres, Canadian academics and entrepreneurs face more difficulties in securing resources. There is also a significant domestic brain drain, with top talent from places like Vancouver or Edmonton often moving to Toronto or Montreal for work. This is in addition to the traditional challenges in scaling and brain-drain created by proximity to the United States.

Social Conscience

A constant theme among those interviewed was their goal of using artificial intelligence to improve society. Some of these beliefs included a commitment to open science, improving our ability to care for individuals facing physical and mental challenges, improving late-stage-of-life care, and decreasing our impact on the environment.
Strengths and Weaknesses

Overview

Canada maintains similar challenges with AI as experienced by their international counterparts, such as labour displacement, transparency, and privacy concerns, research and development (R&D), and increased funding. However, Canada is unique in that its challenges result not of capability, but of capacity. Canada was initially the global leader in AI, but will struggle to compete with emerging AI superpowers such as the U.S. and China.

Strengths

Research & Development

Canada is known to have a sophisticated research and development system underway for artificial intelligence technology. The government hopes to use Canada’s position as a world leader in this area of innovation to better Canada’s economic outlook, moving slowly away from an economy that relies heavily on its natural resources. It will be able do this by attracting investment and creating jobs.

Education

Canada maintains an accessible and affordable education system, with the second-highest rate of high school completion and the highest rate of college completion among its peers. This suggests that the first phase of education is favourable for information and communications technology skills development and other topics associated with AI.

Industries

Canadian emerging technologies complement our natural resource and export-based economy, particularly in the area of green technology development. For example, between 2007-2012, Canada’s Advanced Research and Innovation Network funded $2.4 million for Green IT projects aimed at reducing the ICT carbon footprint.

Weaknesses

Business Development Funding

As Canadian researchers and scientists are offered more lucrative opportunities abroad, particularly in the U.S., Canada loses human capital as a result of a lack of financial capital. There is also the networking and mentorship factor, where Canadian graduates perceive hot spots like San Francisco to have more professional development opportunity.

Canada has a favourable startup atmosphere, but has difficulties in producing mature companies. Our accelerator programs, though promising, are not doing enough to push companies past the startup phase. Additionally, the criteria for startups to gain domestic investment are quite demanding and competitive. As such, there is some reliance on investors from the U.S. in Canadian startups, suggesting that national efforts to improve Canadian technology ecosystem are insufficient.

Commercialization

Canada realizes that it must not only maintain sound R&D initiatives, but also have the ability to commercialize the outcomes - something that the country needs to prioritize in order to see gains in innovation and productivity. There are few programs available for building domestic and international markets for Canadian artificial intelligence products.

Outgoing Talent

As Canadian researchers and scientists are offered more lucrative opportunities abroad, particularly in the U.S., Canada loses human capital as a result of a lack of financial capital. There is also the networking and mentorship factor, where Canadian graduates perceive hot spots like San Francisco to have more professional development opportunity.

Canada has a favourable startup atmosphere, but has difficulties in producing mature companies. Our accelerator programs, though promising, are not doing enough to push companies past the startup phase. Additionally, the criteria for startups to gain domestic investment are quite demanding and competitive. As such, there is some reliance on investors from the U.S. in Canadian startups, suggesting that national efforts to improve Canadian technology ecosystem are insufficient.
# Threats and Opportunities

## Opportunities

### Institutional Support

The Vector Institute received $150 million investment from the Canadian government and businesses. In addition, the Pan-Canadian Artificial Intelligence Strategy is a $125 million initiative to attract and retain top academic talent in Canada, increase the number of post-graduate trainees and researchers studying artificial intelligence, and promote collaboration between Canada's main centres of expertise in Montreal, Toronto-Waterloo and Edmonton. These measures are an active illustration of support of the AI field within high level institutions.

### Post-Secondary Education

Canada’s educational strengths begin to dull at higher levels of skills development, producing few graduates with PhDs and graduates in math, science, computer science and engineering. Because Canada’s university completion statistics are average, financial return from post-secondary education investment is also average. The Conference Board of Canada reports that other countries see higher returns on respective investments.

### Immigration

Due to ongoing innovation-negative geopolitical conditions in major AI superpowers, Canada may prove to be a safe, depoliticized realm for researchers and scientists to conduct AI developments. The need for Canada, as a mature economy, to encourage foreign talent and immigration plays into the advantage served by the reputation of our open borders. Alongside efforts to encourage incoming foreign talent, Canada would benefit from easier recognition of international credentials held by immigrants.

## Threats

### Labour

Technology may lead to major occupational restructuring relatively soon, incurring employee retraining and retainment costs at the business level, as well as public unemployment program costs. Up to 42% of the currently employed Canadian labour force has a high probability (70% or more) of being affected by automation in coming 10-20 years, while approximately 42% of work activities that Canadians are currently being paid for can already be automated using existing technologies.

### Gender Inequality

Canada’s women are underrepresented in STEM. Women maintain only 30% of positions on the Canada Research Chairs Program. More PhDs in science in Canada are earned by men, ranking less favourably than the instance of female PhDs in the U.K. and U.S.. Canada’s ranking has steadily fallen in the Gender Inequality Index from the top spot in 1995, to 25th today. This poses a threat to Canada’s AI outlook in the form of missed economic and innovation opportunities.

In addition, women are set to be the ones most affected by AI job displacement. Human resources, for example, is one of the fields set to face the most immediate impacts. 71% of AI-related job loss is expected to be in jobs held by women.
Canadian AI Internationally

A cursory examination of AI hubs around the world reveals that Toronto and Montreal are well-positioned to emerge as international leaders. Already impressive in concentration of talent, funding, and enterprise - the two cities are well positioned to form central nodes in the emerging global AI network between East Asia, Western Europe, and North America.

Four cities are likely to become the hubs of the artificial intelligence revolution in North America: San Francisco, Seattle, Toronto, and Montreal. While more generally Montreal and Toronto do not challenge their American counterparts in terms of opportunity in tech, they currently possess a significant advantage in artificial intelligence research, driven primarily by two factors: the concentration of AI experts in Canada, and the desire of those experts to stay in Canada.

International Market and Potential for Canadian AI

The worldwide market for artificial intelligence grew from approximately 1.37 billion dollars to 2.42 billion USD in 2017. It is projected to eclipse 4 billion USD in 2018. Current major uses of artificial intelligence include image recognition, object identification, detection, and classification, as well as automated geophysical feature detection. Over the next 10 years, major growth with be concentrated in human resources, financial tech, transportation, manufacturing, energy and health sectors.

Canada’s immediate-term competitive advantage is important, as the AI boom has already peaked in terms of annual market percentage growth. It will continue to expand by approximately 50% or more for the next 4 years.

Upcoming Report:

Our report ‘Opportunities in Asia for Canadian AI’ is scheduled for release in Q2 2018. For more information and pricing, please contact us through our website, www.greentechasia.com.

The research included interviews and in depth analysis of 297 of Canada’s AI companies, researchers and research institutes. It will provide industry, policy makers, investors, and researchers with valuable insights and details on Canada’s AI sector.

The report outline and summary are available for download free of charge. More detail, including databases, competitive analyses, as well as opportunities for bespoke studies are available for sale. For further interest and inquiries on pricing please contact us as info@greentechasia.com.

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