

Why Artificial Intelligence Giants are Heading North to Montréal







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Montreal





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01 Top Reasons to Invest in AI in Greater Montréal





Top reasons to invest in AI in Greater Montréal



Top 3 best places to invest in AI in North America



World leaders, including Google, Microsoft and Facebook, opened Al research labs in Montréal in the last few years



university research funding with \$1.34+ billion yearly

1st in Canada for



600+ researchers MSc, PhD, post-doc and applied AI students at Mila, the world's largest academic research lab in deep learning and reinforcement learning



Cutting-edge expertise developed by world-renowned researchers such as **Yoshua Bengio**, **Joëlle Pineau**, **Doina Precup**, **Hugo Larochelle** and **Irina Rish**



More than **14,000 university students** enrolled in artificial intelligence and data-related programs



More than \$3 billion in Al investments announced in Greater Montréal since 2016



Home of **Scale AI**, Canada's AI supply chain supercluster and the International Centre of Expertise for the Advancement of Artificial Intelligence (**ICEMAI**)



Numerous possibilities for collaboration between researchers and the industry with **Prompt, Scale AI, Mitacs**

02 A World-Class Artificial Intelligence Hub





Mila, a thriving AI hub in the Mile-Ex neighborhood

- With 600+ researchers, Mila is the world's largest academic research lab specialized in deep learning and reinforcement learning
- A collaborative ecosystem of AI researchers, startups and major companies
- Examples of strategic global partners within Mila:





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A unique centre of excellence: IVADO (Institute for Data Valorisation)



Close to 150 Over 270 More than 1,400 scientists members and partners collaborative (professors, professionals and research projects students) with complementary areas of expertise Research DATA SCIENCE FOR REAL-TIME DECISION-MAKING 🕂 techlab 🛛 📿 CIRRELT Mila GERAD centres agtech **Network** CARGO AERDY partners MONTREA Academic CIRANO Allier savoir et décision research chairs partners & labs International .AAS The Atlanstic 2 · 0 · 2 · 0 partners **Alan Turing** Institute

Source: IVADO, Rapport mi-mandat, 2021.



Montréal's leading Al researchers

- 1st in Canada and 2nd in the world in the 2021 Top Scientists Ranking for Computer Science & Electronics
- Winner of the Turing Award 2018: "Nobel Prize of computing"
- Winner of the Killam Prize in Natural Sciences in 2019
- Fellow of the Royal Society
- Full Professor, Department of Computer Science and Operations Research, Université de Montréal
- Founder and Scientific Director of Mila
- Scientific Director of IVADO
- CIFAR Fellow and Program Director, Learning in Machines and Brains
- Worked at the CIFAR research institute alongside Yann LeCun (now at Facebook) and Geoffrey Hinton (now at Google)





CIFAR CANADIAN INSTITUTE FOR ADVANCED RESEARCH

World-renowned researchers who make Montréal shine



Joëlle Pineau

Associate Professor with the School of Computer Science at McGill University and CIFAR Senior Fellow, Program in Learning in Machines and Brains. She is also the Head of the Facebook Al Research lab, as well as a member of Mila



Doina Precup

Associate Professor with the School of Computer Science at McGill University and CIFAR Senior Fellow, Program in Learning in Machines and Brains. She is also the Head of the DeepMind Lab in Montréal, as well as a member of Mila



Gregory Dudek

Chaired professor of computer science at McGill University and Director of McGill School of Computer Science. He is also the Head of the Samsung Al Center, as well as a member of Mila



Aaron Courville

Associate Professor in the **Department of Computer Science and Operations Research** (DIRO) at the University de Montréal, and **CIFAR Fellow**, Program in Learning in Machines and Brains. He is also a member of **Mila**

Université de Montréal



Simon Lacoste Julien

Associate Professor in the **Department of Computer Science and Operations Research** (DIRO) at the University de Montréal and **CIFAR Fellow**, Program in Learning in Machines and Brains. He is also Director at **Samsung SAIT AI Lab** and a member of **Mila**

Université de Montréal



Andrea Lodi

Full Professor at École Polytechnique de Montréal and the **Canada Excellence Research Chair in Data Science for Real-Time Decision-Making**, as well as a member of **Mila**







Major public investments to support AI development and adoption

\$93.5M	from the First Research Excellence Fund (2016)
\$100M	over the next 5 years for the creation of a Québec Al cluster (2017)
\$44M	for the Pan-Canadian Artificial Intelligence Strategy (2017)
\$313M	for Scale Al Supercluster (2018) and for the development of Al talents (2019)
\$329M	over the next 5 years to accelerate the adoption of AI in Québec (2019)
\$15M	for the International Centre of Expertise in Montréal for the Advancement of Artificial Intelligence (ICEMAI) (2019)

Montréal selected for Canadian Al cluster headquarters

SCALE AI

Canada's AI supply chain supercluster, dedicated to building the next-generation supply chain and boosting industry performance by leveraging AI technologies



Québec's Al organization fostering the development of Québec's Al ecosystem and mobilizing stakeholders in the field around common projects





OBVIA, fostering responsible AI and digital technology

- The International Observatory on the Societal Impacts of AI and Digital Technology (OBVIA) helps maximize the positive effects of AI and digital technology on society and minimize its negative impacts
- Founding institutions: 18 universities and colleges in Québec, such as:



- Over 100 partners in Québec, across Canada and internationally
- Financing innovative research projects through grants
- Over 220 researchers working across disciplines



The International Centre of Expertise for the Advancement of Artificial Intelligence (ICEMAI) launched in Montréal

- Spearheaded by Montréal International as part of the Global Partnership on Artificial Intelligence (GPAI)
- It is one of the two centres of expertise along with the centre in Paris who will work closely with the GPAI Secretariat, housed at the OECD
- ICEMAI will support two of the four themes the GPAI will be working on: responsible use of AI and data governance
- It will also analyze measures to strengthen our national capacity to commercialize and adopt Alrelated technologies



- **\$15M investment** by the Government of Québec and the Government of Canada
- A collaboration of industry, the scientific community and civil society:





In addition to local and international experts

Forum

IA Ouébec

A few of the world leaders developing their AI expertise in Montréal



Other foreign companies that have chosen Greater Montréal



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BO/AST AI



A booming startup ecosystem

- One of the top startup ecosystems in the world
- US\$2.7 B+ in VC investments between 2018 and 2020 in Montréal
- Lucrative funding for Montréal's AI companies:

🗮 hopper	raised US\$100M - October 2018 - Series D
mnubo	acquired for US\$79M – July 2019 - by Aspen
stradigi 🛚	raised US\$40.3 - November 2019 - Series A
🤍 dialogue	raised US\$32M - July 2020 - Series B



Caisse de dépôt et placement CDPQ-AI Fund: du Québec \$250M dedicated to AI (2019)

Source: "Global Ecosystem Report", 2018; "Montréal Startup Ecosystem Report", Credo, 2016; "Midterm Report" – Smart City, February 2017; Canadian Venture Capital & Private Equity Association, 2018, 2019 and Q3, 2020.

Top AI accelerators and incubators to help develop tomorrow's breakthroughs

techstars_ Montreal Al Accelerator

This program focuses on advancing the development and application of AI across industries and markets



Recognized as one the world's top incubator programs by UBI Global's Top 20 University Business Incubators for 2019–20. The program for AI startups is run in partnership with Thales



A partnership with HEC Montréal, this program focuses on AI and data science to capitalize on Montréal's expertise in the sector

FounderFuel

This program provides structured and unstructured mentoring and coaching by proven entrepreneurs over a four-month residency program for two cohorts of 8 to 10 companies per year



This program is for early or idea stage Alenabled startups



This program specializes in the consumer electronics technology market, with a special interest in companies leveraging AI



Recognized as one the world's top incubator programs by UBI Global's Top 20 University Business Incubators for 2019–20. It offers programs for startups at every juncture of their growth

Sample of leading local companies active in AI in Montréal

stradigi 🛙	wrnch	V LABS	ρυτομρτ		🔆 InVivo Al
Dataperformers	저 hopper	Aerial	m9ka	"keatext	LANDR
acceo	Technologies + Marketing	zapio		<kaloôm></kaloôm>	
🌔 coveo™	ℰ℻	ARN Robotique	Silentale	nectar	🗘 algolux
Semeon	mirametrix	OSSIACO	(hey) day	C © RSTEM	PERF <mark>IQ</mark> T
	ITNX	VENTION VENTION	fluent.ai		🤍 dialogue

Examples of Montréal companies using AI in various fields



Stradigi AI, a global leader in AI platform for businesses, based in Montréal



"Stradigi AI redefines how enterprises work by scaling AIpowered decision-making capabilities for any business user"

Source: IT World Canada, November 14, 2019.



At the forefront of AI for good initiatives

For ethical & responsible AI



Sin
Montréal Declaration mc
Responsible AI_ fro

Since December, 2018 more than 1,900 signatures from citizens and 108 organizations

An initiative of the Université de Montréal

Research centres with AI for good initiatives



Fostering a dialogue on the socially responsible use of AI and the development of social and environmental applications. Montréal's AI4Good lab aims to get more women working in Artificial Intelligence and other events

HumanIA

Directing AI towards the common good through humanistic and multidisciplinary studies and research



Catalyst for technosocial and responsible innovation projects



TechAide AI4Good Conference and Hackathon 2020

SINCE ITS OFFICIAL LAUNCH IN 2016, TECHAIDE HAS RAISED \$1.34M FOR CENTRAIDE

Many organizations support the development of the AI ecosystem

An applied research and expertise The statistical office of UNESCO UNESCO INSTITUTE FOR centre in IT, dedicated to making and the UN depository for crossorganizations more effective and nationally comparable statistics on competitive through the education, science and development of innovative technology, culture, and technology and the transfer of communication leading-edge knowledge A joint initiative of 12 colleges and The first institute of distributed AI 21 7 universities in Montréal, PIA was in Montréal, created by ÉTS and established to address gaps in Ultra Electronics to adapt AI techniques for use in systems education stemming from developments in the field of AI functioning in extreme conditions An umbrella organization of JA A centre for innovation and applied Québec universities using research, JACOBB aims to advanced research computing to accelerate the application of AI Calcul **Québec** support the research community into the economic fabric of Québec and business sector Helping Québec companies Connecting researchers with the **Mitacs** increase their competitive industry, Mitacs works closely with prompt advantage through R&D financing Mila's team, partner companies, and partnerships with the and match the innovation projects

institutional research community

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to the most gualified research

interns in the field

Al stands on a strong information technologies ecosystem

- 160,000+ IT workers and 7,000+ companies in Greater Montréal
- **Lowest operating costs in North** America for software development, ahead of Toronto, Boston, New York and San Francisco
- Broadly diversified industry:



leader in digital

highest tech jobs concentrations among the largest metropolitan areas in Canada & the U.S.

Top 5



03 A Deep and Growing Pool of Highly Qualified Talent





The best student city in the Americas and Canada's university capital

- Canada's university capital: 11 university institutions and 60 colleges
- 320,000 post-secondary students, including more than 200,000 university students and 35,500 international university students
- 1st in Canada for university research funding with \$1.34+ billion yearly



Best student city in the Americas tied with Boston QS Best Student Cities Rankings 2022

1	Montréal tied with Boston
2	Toronto
3	New York
4	Vancouver
5	San Francisco

25 Source: QS Best Student Cities in the World, 2022; Ministry of Education and Higher Education, 2021; Research Infosource Inc., 2020.



A new generation ready to take over

More than 14,000 university students are enrolled in artificial intelligence and data-related programs in Greater Montréal:

Al-related University programs	Students enrolled 2019-2020	University graduates 2019
Computer Sciences	10,181	2,061
Computer Engineering and Computer Science	2,328	464
Mathematics	1,416	313
Applied Mathematics	168	33
Probabilities and Statistics	203	51
Total	14,296	2,921

Source: Ministère de l'Éducation et de l'Enseignement supérieur, 2021; compilation Montréal International.

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A labor pool of AI and tech-related workers

Al-related jobs	Employees in 2020
2171 - Information Systems Analysts and Consultants	46,500
2174 - Computer Programmers	40,300
0213 - Computer and Information Systems Managers	8,000
2147 - Computer Engineers	6,500
2173 - Software Engineers and Designers	4,400
2172 - Database Analysts and Data Administrators	9,900
2161 - Mathematicians	3,300
Total	118,900



Montréal's workforce of + 2 million is among North America's most dynamic and offers a high degree of stability with turnover rates well below North American averages. The turnover rate for the IT industry is 12%

* Overall workforce risk includes relocation and expatriation; mergers, acquisitions and partnerships; absenteeism; employee health and well-being programs; internal relationships; employment in general; globalization; cultural differences; and talent sources.

Source: National Occupation Classification (NOC) 2020, TechnoCompétences, 2020.

There are close to 19,500 workers with AI skills in Montréal, an increase of 22% over the past 12 months



*Key skills identified using LinkedIn's Talent Insights tool are not cumulative or exclusive. **Excluding profiles for the following titles: *founder, co-founder, CEO* and *President*. Source: LinkedIn, Talent Insights, February, 2020.

19% of Montréal's AI workers have a PhD and 48% have a master's degree



04 Attractive Operating Costs and Incentives





Operating a business costs less in Greater Montréal than in any other major metropolitan area in Canada and the U.S.

Operating costs index for software development



20 largest metropolitan areas in Canada and the U.S., 2021

Note: The annual operating cost calculations are based on labor and property costs in US\$. Source: fDi Benchmark, 2021.

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Montréal



28% cost advantage

for software development

compared to the average 20 largest metropolitan areas in Canada and the U.S.

Advantageous AI and IT salaries for employers

Annual base salaries (US\$) for AI / IT professions

	Montréal	Toronto	Vancouver	New York	San Francisco
 Software Developer	\$66,172	\$66,414	\$68,672	\$104,404	\$124,957
Computer Programmer	\$68,072	\$68,321	\$70,644	\$107,932	\$129,179
Software Engineer in Al	\$75,757	\$76,034	\$78,619	\$122,504	\$146,620
Machine Learning Engineer	\$94,969	\$95,316	\$98,557	\$157,006	\$187,915
Data Scientist	\$94,969	\$95,316	\$98,557	\$157,006	\$187,915

Low mandatory benefit costs for employers

Examples of mandatory benefit costs for employers, 2021

Gross annual salary*	\$50,000	\$100,000	\$125,000
Québec Public Pension Plan (employee: 5.9%; employer: 5.9%, max. \$3,427.90)	2 743,50 \$	3 427,90 \$	3 427,90 \$
Québec Parental Insurance Plan (employee: 0.494%, employer: 0.692%, max. sal. of \$83,500)	346,00 \$	577,82 \$	577,82 \$
Employment Insurance (employee: 1.18%, employer: 1.65%, max. sal. of \$56,300)	826,00 \$	930,08 \$	930,08 \$
Health Services Fund (max. 4.26% if global salary total is more than \$6,5M)	2 130,00 \$	4 260,00 \$	5 325,00 \$
Commission des normes du travail (Labour standards board) (0.07%, max. sal. of \$83,500)	35,00 \$	58,45 \$	58,45 \$
Commission de la santé et sécurité du travail (Occupational health and safety board) (0.42% in service sector, max. sal. of \$83,500)**	210,00 \$	350,70 \$	350,70 \$
Workforce Skills Development and Recognition Fund - Québec Training Law 1% (1% of their total payroll in training for employers with total annual payroll over \$2M)	500,00 \$	1 000,00 \$	1 250,00 \$
Total benefit costs	6 790,50 \$	10 604,95 \$	11 919,95 \$
Total cost	56 790,50 \$	110 604,95 \$	136 919,95 \$
Total benefits in % of gross annual salary	13,58 %	10,60 %	9,54 %

Note: *Paid vacation represents a minimum of 4% of salary and is included in gross salary. Some rates apply up to a maximum insurable revenue. **The rate for the service sector (65110 - *Bureau de courtage; bureau de services professionnels; bureau offrant des services de soutien administratif*) is 0.42%. The average premium rate in 2021 is \$1.77 per \$100 of payroll. Source: Revenu Québec, 2021.

E-Business tax credit could cover up to 30% of eligible salaries

SCENARIO

Québec refundable tax credit for the development of E-Business:

 Covers up to 30% of employee salaries, including 24% refundable, up to \$25,000 per employee, per year

ASSUMPTIONS¹

- Foreign-controlled private company
- 20 employees eligible @ \$80,000/year
- 100% of their work is related to eligible activities under the E-Business



= \$384,000

Note:

1. All values are in \$CA.

2. The unused portion of the non-refundable tax credit can be carried back three years or forward 20 years. Source: Ministry of Finance of Québec, 2019; Montréal International's analysis, 2019.

R&D tax credits: 15% non-refundable from the government of Canada and 14% refundable from Québec

SCENARIO

Scientific Research and Experimental Development (SR&ED) tax incentive program

ASSUMPTIONS¹

- Private, foreign-controlled company, more than \$75M assets
- 15 eligible employees @ \$100,000/year
- 100% of their work is related to eligible activities
- Subcontractor: \$200,000

	Canada (Federal)	Québec
Qualifying salaries and wages	\$1,500,000 (A)	\$1,500,000 (D)
Other eligible expenses @ 55% ²	\$825,000 (B)	-
Subcontractor ³	\$160,000 (C)	\$100,000 (E)
Exclusion on the first \$225,000 of R&D expenditures ⁴	-	\$(225,000) (F)
Deduction of the Québec R&D credit ⁵	\$(192,500) (G)	-
Total qualifying expenditures	\$2,292,500 (A) + (B) + (C) - (G)	\$1,375,000 (D) + (E) - (F)
Refundable Québec credit @ 14%	-	\$192,500 (G)
Non-refundable federal credit @ 15%	\$343,875 (H)	-
Total tax credit	\$536,375 (G)) + (H)

Note:

1. This model takes into consideration recent changes made to certain tax credits (2012, 2014 and 2015) and is thus valid as of fiscal 2019.

2. Up to 55% of qualifying salaries and wages, federal only: expenditures should be related to R&D activities.

3. Only 80% of the amount paid to a subcontractor is eligible for a federal tax credit and 50% for Québec tax credit.

4. Québec only: For SMEs (less than \$50M assets) there is an SR&ED tax credit exclusion on the first \$50K of R&D spending. For large companies (more than \$75M assets) and companies under foreign control, the exclusion applies on the first \$225K of R&D spending. This amount is deducted of the qualifying salaries and wages.

5. For the purposes of calculating the combined rate of the credit, the tax credit from the government of Québec is applied against the federal tax credit.

Source: Ministry of Finance of Québec, 2019; PWC, 2019; Compilation: Montréal International, 2019.

Combination of E-business and SR&ED tax credits

Refundable tax credits for Scientific Research and Experimental Development (SR&ED) and E-Business¹:

- E-Business covers up to 30%, including 24% refundable, of employee salaries up to \$25,000 per job per year
- SR&ED covers 15% from the Government of Canada, and 14%, refundable, from the Government of Québec

SCENARIO		SR&ED	E-Business
Combination of the Québec refundable tax credit for	-	FEDERAL	QUÉBEC
the development of E-Business and the federal Scientific Research and Experimental Development	Qualifying salaries and wages	\$1,600,000 (A)	\$1,600,000 (C)
(SR&ED)	Other eligible expenses @ 55% of A ³	\$880,000 (B)	-
	Total qualifying expenditures	\$2,480,000 (A)+(B)	\$1,600,000 (C)
ASSUMPTIONS ²	Federal credit @ 15% of total	¢070.000	
 Foreign-controlled private company 	qualifying expenditures	\$372,000	-
 20 eligible employees @ \$80,000/year 	Québec credit @ 30% ⁴ of total qualifying expenditures	-	\$480,000
 100% of their work is related to eligible activities 	Total credit	\$852,0	000

Other scenarios are possible to maximize the total credit amount depending on the R&D intensity

Note:

- 1. Company has to choose between the SR&ED or the E-Business tax credit for the Québec credit.
- 2. This model takes into consideration recent changes made to certain tax credits (2012, 2014 and 2015) and is thus valid as of fiscal 2019.
- 3. Up to 55% of qualifying salaries and wages, federal only: expenditures should be related to R&D activities.
- 4. If the company has no taxes to be paid, the Québec credit will be 24%.

Source: Ministry of Finance of Québec, 2019 - Compilation: Montréal International, 2019.



Other major incentives

Financial assistance for job creation and training

 25% of eligible costs for the implementation of a training program and 50% of costs incurred for the creation of a human resource department

Tax holiday for foreign researchers and experts

- Five-year Québec income tax exemption
- 0% of provincial income tax on salary for the 1st and 2nd year
- 25% for the 3rd year
- 50% for the 4th year
- 75% for the 5th year

Internship units to drive collaboration and innovation between universities and companies

 500 internships created and \$2M invested in Québec to bolster AI research, talent development, and job creation

Source: Mitacs, 2020.

Québec offers corporations an attractive tax treatment

Comparison of corporate effective tax rate (%) Selected Canadian provinces and U.S. States, 2021

Québec (Montréal)	26.50%
Ontario	26.50%
Massachusetts	27.32%
California	27.98%
New Jersey	28.11%
Illinois	28.51%
New York	34.64%



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05 An Exceptional Quality of Life







A low cost of living

Greater Montréal is **cheaper than almost all other large cities** in North America, Western Europe, China and Japan:

Mercer Cost of Living Index World rank from least to most expensive*, 209 cities



Greater Montréal offers a higher purchasing power thanks to:

- Cheap housing
- Low medical insurance costs
- Generous family allowances
- Affordable child care

* Montréal International's analysis. Source: Mercer, "Cost of Living Survey," 2021.

An exceptional quality of life

 Montréal is the 2nd best city in the world for millennials:

> Nestpick Millennial Cities Ranking, 2018 World rank



- Lowest homicide rate among the 20 largest metropolitan areas in Canada and the U.S.
- Universal health care
- Lowest education tuition fees in North America
- Vibrant cultural metropolis with 100+ festivals and 70 museums

41 Source: Nestpick, "Millennial Cities Ranking", 2018; Mercer, "Quality of Living Survey", 2017; Federal Bureau of Investigation, 2018; Statistics Canada, 2018.





Globally recognized

Most reputable city in the Americas Reputation Institute, 2018

Best city in Canada and 6th in the world Time Out, 2019

Best student city in the Americas tied with Boston QS Best Student Cities Rankings, 2022

Most affordable major city in Canada and the U.S. UBS Prices and Earnings, 2018

Best Cycling City in North America Coya, Global Bicycle Cities Index, 2019

Second most walkable city in Canada Walk Score, 2020

3rd **friendliest city in the world** Rough Guides, 2016

UNESCO City of Design since 2006

Top host city in North America for international association events Union of International Associations (UIA), 2020

06 Montréal International's Personalized, Free and Confidential Services







Montréal International, a single point of access to a series of personalized, free and confidential services





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