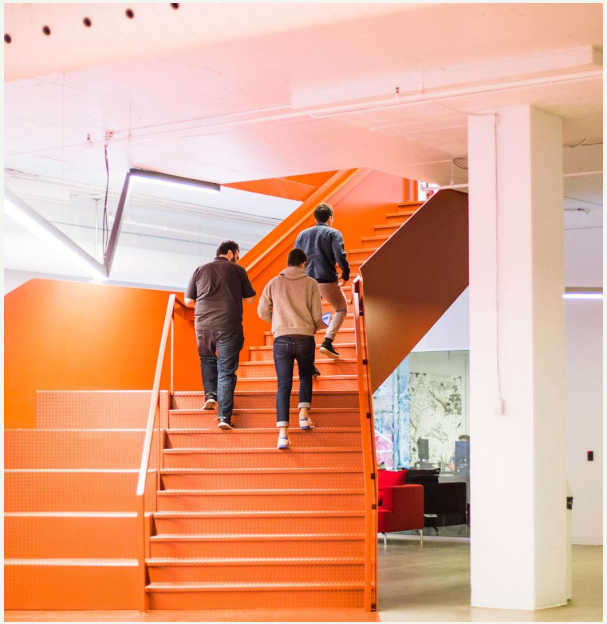
Mila

Exploring AI for Indigenous Communities

A bit about me

A bit about Mila

(Québec’s AI Research Institute)



> All of [the] data that humans are producing and feeding into these large AI systems is really contributing to collective wealth and should be treated as such...how do we make sure that technology is developed for good and that the wealth that is created goes back to everyone?
>
> -Yoshua Bengio

What is AI?

AI is a branch of computer science that involves programming computers to imitate human thinking.

It includes various technologies, applications and algorithms.

Photo Source: Mckinsey

The importance of data sets!

Data sets form the foundation of most AI systems. These systems utilize data to learn and establish connections.

Certain programs continuously update and evolve based on their datasets — we call these “online programs.”

Why is AI such a big deal?

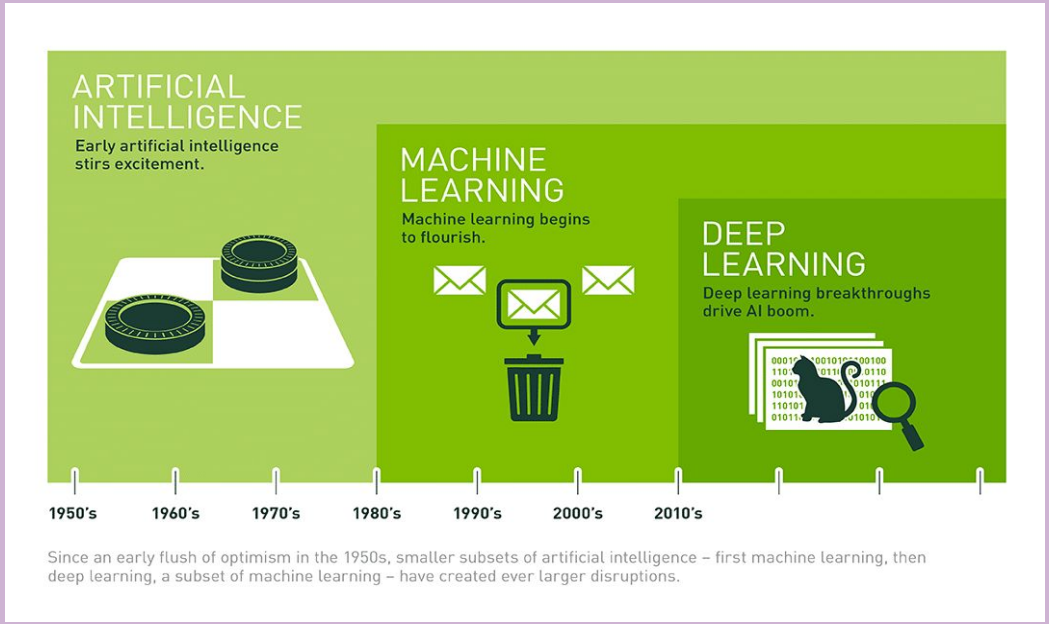


Photo Source: Nvidia

A (very) brief history of AI...

Narrow vs. General Intelligence

Artificial Narrow Intelligence

Often able to work orders of magnitude faster or more accurately than humans, but only for well-defined, specific tasks

Examples:
Object recognition, self-driving vehicles, voice-assistants

Artificial General Intelligence

On par with human intelligence in all ways.

Examples:
No real-world examples, only in science fiction (so far!)

Artificial Super Intelligence represents systems that would exceed human intelligence.

Photo Source: here.

The Seven Patterns of AI

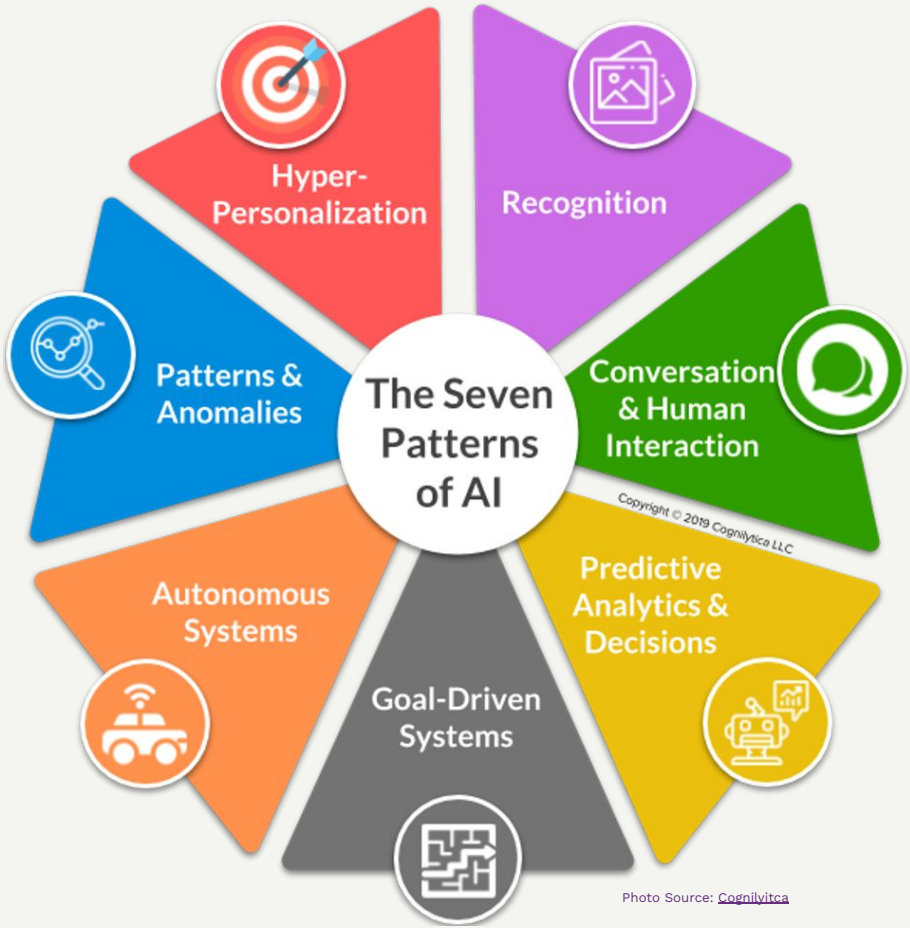


Photo Source: Cognilytica

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Machine Learning

Machine learning is a branch of artificial intelligence focused on computer programs that can enhance themselves, or "learn," without explicit programming. These programs evolve and improve with each run, adapting through repeated experiences and vast datasets.

Photo Source: IT World Canada

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Deep Learning

A subset of machine learning that is inspired by the way our human brains work (neurons in our brain).

Deep learning is generally considered to be the most promising AI field to move us toward general intelligence.

Photo Source:

Natural language processing & Computer vision

Natural language processing

The analysis and understanding of language. A natural language processor can understand the basics of human language. An AI with natural language understanding begins to process the subtleties of human language, including things like emotion.

Computer vision

Field that enables computers or devices to “see” and comprehend visual information. Its goal is to extract useful information from pictures.

Thanks to self-driving vehicles, computer vision is a very active area of R&D.

Indigenous AI

How can AI benefit Indigenous communities?

How can Indigenous perspectives and knowledges benefit AI?

What are some of the risks and challenges posed to Indigenous communities with regards to AI?

'Joy' by Christi Belcourt

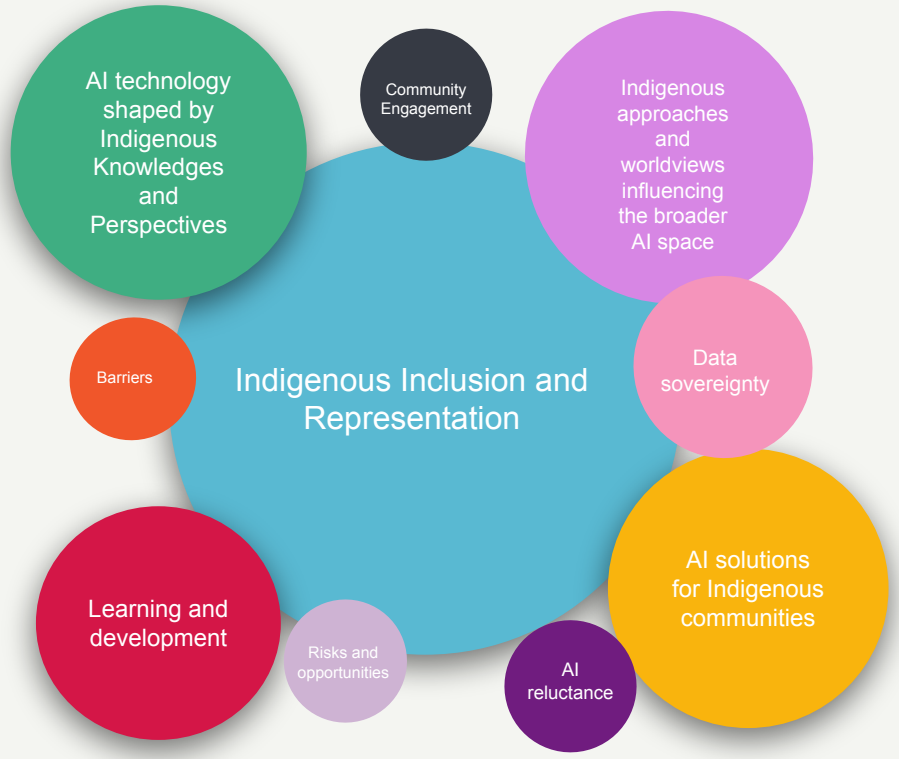

AI technology shaped by Indigenous Knowledges and Perspectives
Community Engagement
Indigenous approaches and worldviews influencing the broader AI space
Barriers
Indigenous Inclusion and Representation
Data sovereignty
Learning and development
Risks and opportunities
AI reluctance
AI solutions for Indigenous communities

Photo: https://oecd.ai/en/work/defining-ai-incidents-and-hazards

Existing Indigenous Initiatives at Mila

Indigenous AI Impact Residency

Pathfinders

Learning program

Career pathway program for Indigenous talent co-delivered with Indspire.

SAIGE

Applied solution

AI-powered tool connecting Indigenous youth with tailored post-secondary funding resources.

FLAIR

Applied solution

Indigenous voice AI systems that advance language revitalization while upholding data sovereignty.

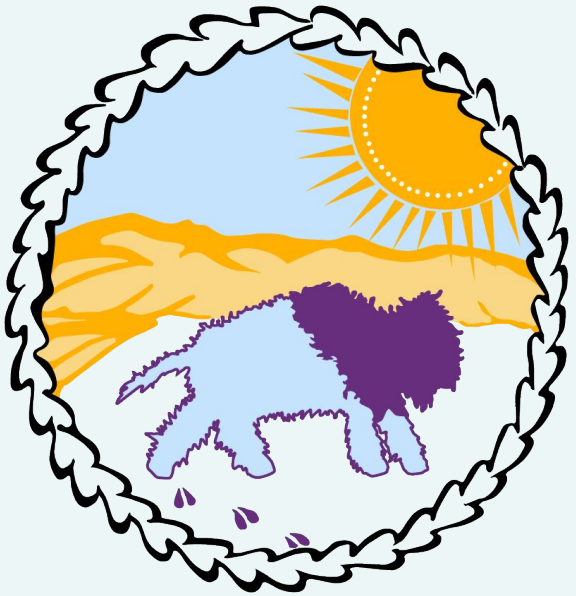
Indigenous Pathfinders in AI

A Leadership Program

1.0

Overview

Mission, Objectives, and Guiding Principles



Why Pathfinders?

OPPORTUNITY & NEED

Indigenous people comprise 5% of Canada's population but only roughly 1% of the digital workforce, with even lower representation estimated in AI.

- Indigenous Pathfinders in AI is a new program igniting Indigenous talent to learn, develop and lead the evolution of artificial intelligence (AI).
- Bridging Indigenous perspectives with AI technologies, Pathfinders offers an exciting opportunity to close the gap early on in the field’s evolution.

Our Vision

Cultivate

Cultivate a thriving community of Indigenous AI professionals.

Amplify

Amplify Indigenous perspectives in AI development.

Catalyze

Catalyze AI solutions addressing vital Indigenous community needs.

Guiding principles

The core of the program is structured around the following four guiding principles:

Bridging Worlds, Shaping Futures

Embracing the Cree approach of “teaching each other”, the program creates a vibrant space where AI specialists and Indigenous talent converge to share insights and knowledge.

- This collaborative environment is further enriched by Knowledge Keepers, Elders, and cultural contributors, who weave traditional wisdom throughout the learning journey, adding profound cultural depth to the experience.

- For its inaugural session, the program united 11 First Nations, Métis and Inuit participants from across the country.

Nurturing Indigenous Innovation

Our dynamic career pathway program is open to First Nations, Inuit and Métis students at the undergraduate or graduate level, recent graduates from post-secondary institutions, and those with relevant experience.

Learning objectives:

- Understand the foundational principles of Machine Learning
- Interdisciplinary exploration of AI and its adjacent domains
- Hone project management skills through the development of an AI project geared toward the benefit of Indigenous communities
- Explore the intersections between Indigenous and AI

Throughout the summer, participants immerse themselves in a blend of classroom learning and hands-on experiences, developing AI projects with a social benefit, including for Indigenous communities.

Three innovative projects from the 2024 cohort

EDUCATION

SAIGE

AI-powered tool connecting Indigenous youth with tailored post-secondary funding resources

SUSTAINABILITY

Green Circle

Cutting-edge system fostering Indigenous food sovereignty through personalized agricultural guidance

HEALTH

Indigecare Sim

AI-driven tool identifying optimal long-term care policies for Indigenous elders in Canada

> Amazing program...excellent intro to AI in so many domains and from so many perspectives. Loved it. So honoured to have been a part of the first cohort. Hope to see more!
>
> -Pathfinders Participant

5.0

Discussion/ Questions

Discussion

- How can AI be leveraged to support and enhance Indigenous tourism while ensuring that cultural knowledge and traditions are represented authentically and respectfully?

- What are the key challenges and ethical considerations when using AI in Indigenous tourism, and how can communities ensure they retain ownership and control over their stories, data, and digital representations?

- What practical steps can Indigenous tourism operators take to integrate AI-driven tools—such as language revitalization apps, immersive experiences, or personalized visitor engagement—while maintaining a community-centered approach?