

# INTELLIGENT SYSTEMS AND MACHINE LEARNING (ISML)

#### **RESEARCH CLUSTER**

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MSc IS and Related Graduate Certificates Orientation
November 8, 2024

Focused on the future of learning.

## **Outline**

- 1) Overview
- 2) AI Timeline
- 3) ISML Cluster
- 4) ISML Goals
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- 7) Funding Support
- 8) How to become a member?



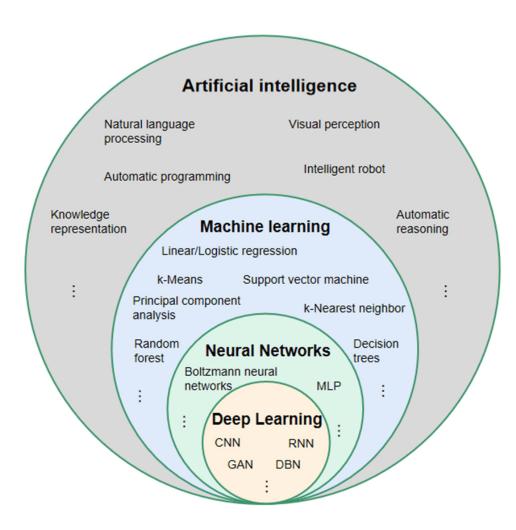
#### 1. Overview

• Intelligent Systems (IS):

Systems capable of interpreting complex data, learning, adapting, and making decisions.

Machine Learning (ML):

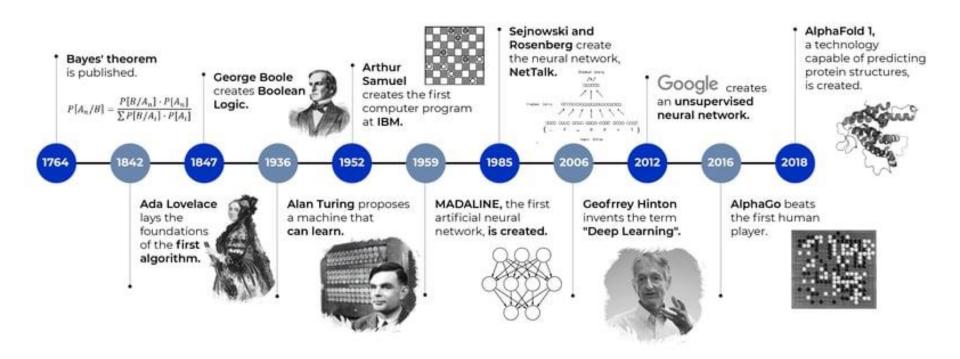
Subset of AI focused on algorithms and statistical models for computers to learn from data.





# 2. Machine Learning Timeline

#### MACHINE LEARNING TIMELINE

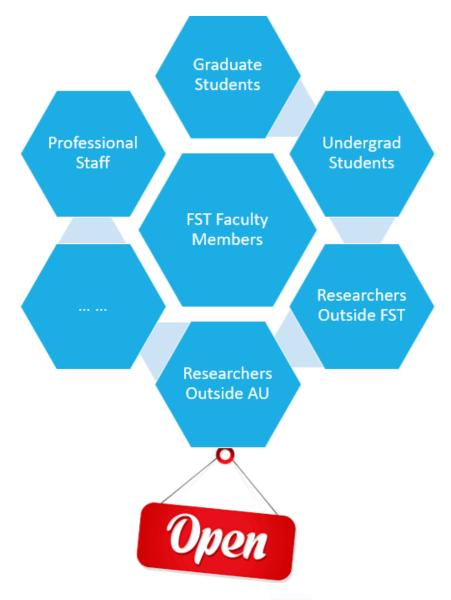


John Hopfield and Geoffrey Hinton received Nobel Prize in 2024 for their contribution in deep learning.



## 3. ISML Cluster

- Sponsored by FST
- Established in Sept. 2021
- Founder and Coordinator –
   Dr. Fuhua (Oscar) Lin
- Members
  - 17 Academic member
  - 1 Professional
  - 20 Graduate students
  - 22 Undergraduate students





#### 4. ISML Goals

- Provide a **collaborative and supportive research environment** for faculty and students, e.g.,
  - Partnership with other universities
  - Interaction internally and externally
  - Solving real-world problems



### 5. ISML Activities

- 6 online workshops held
- 10 presentations delivered
  - 4 by MSc IS students
  - 4 by academic and professionals
  - 2 by invited keynote speakers





## 6. Closely Related Courses

- COMP452 AI for Game Developers
- COMP456 AI
- COMP657 AI Principles & Techniques
- COMP658 Computational Intelligence
- COMP659 Statistical Language Processing for Text Analytics
- COMP667 Multiagent Systems
- COMP682 Data Mining
- COMP683 Learning & Knowledge Analytics
- COMP684 Business Intelligence



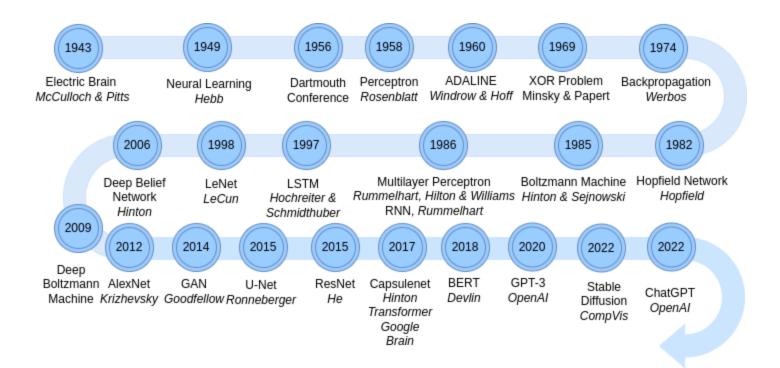
### 7. How to become a member?

- Cluster weblink:
  - https://oscar.athabascau.ca/isml/index.html
- Contact:
  - Dr. Fuhua (Oscar) Lin: oscarl@athabascau.ca
  - Dr. Ali Dewan: adewan@athabascau.ca



# **Thank You!**







#### Timeline of Artificial Intelligence The first pet dog **Turing Test** Joseph Alexa, Amazon's Siri, an intelligence becomes the Weizenbaum capable of intelligence virtual OpenAl releases virtual assistant, is developing pioneering invents chatbot GPT-40 capable of assistant, owns integrated into personality and technique to capable of and accomplishes deciphering **iPhone** skills is developed determine the conversing with multiple modes shopping tasks intelligence of a humans by Sony machine 2011 2014 1950 1997 1999 2020 2024 Watson, a Roomba, the first The first chess question-answering mass-produced John McCarthy OpenAl announces machine Deep Blue computer, bags up vacuum cleaner, GPT-3 tool for coins the term defeats the reigning 1st place on started navigating "Artificial automated champ "Garry Jeopardy Intelligence" homes conversations Kasparov"



#### **Evolution of Generative Al** Early Neural In the early Google Bard Google Bard Network Models 2000s, the Code was made 1950-1980's advent of integration GPT-3 was available in In the 1980s. Open Al's deep Google Bard Copilot published, 40+ Boltzmann Assistants Al Rise of learning led announced Autoencodavailable with and API was languages machines to released LAM Microsoft ers and made all Microsoft Meta emerged to First version significant Samsung models Variational Integrated available to suite like office of GPT was Launches advances in enable released (Rabbit R1, Autoencodpublic in Q4 Bing with & Power Generative released Llama2 unsupervised Gauss Al Al Pin) ers (VAEs) 2021 **GPT** Platform ΑI learning for deep model learning. early 2010s 1990's 2014 - 2018 2022 May 2023 Sep 2023 2019 Mar 2023 Dec 2023 **Early 2000s** Feb 2023 July 2023 2024 2010's 2018 2020 Apr 2023 Nov 2023 1950 -**Onwards** 1980's GPT-4 was Google Gemini Transforme Bard was In the Generative announced Google Nov 2022, 2<sup>nd</sup> version Pro and Pro r-based incorporated Adversarial 1990s, Chat GPT Bard was Chat GPT vision live of GPT was deep neural Networks with all Google neural was made API public AMD networks released (GANs) network announced release available Apps led to the AI challenges models Progressive Open Al in 180+ boom in Google Bard Nvidia in Al began to GANs and countries introduces generative Launched Hardware emerge. StyleGAN systems DALL-E-3 Apple releases Microsoft 2017 - 2019 during the MLX announces early 2010s. Copilot Framework

