



ALBERTA MACHINE  
INTELLIGENCE INSTITUTE

# Alberta Machine Intelligence Institute

Driving  
the Future  
of Machine Intelligence

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# About Amii

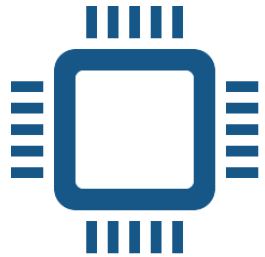
- Non-profit focused on making Alberta the **premier destination** for **foundational research** and innovative **commercial application** of AI
- Amii/UAlberta are **top 3 worldwide** in AI & machine learning research
- World leader in applying AI to **diverse areas**: energy, healthcare, environment, etc.
- Home Dr. Richard Sutton and Reinforcement Learning

Amii is supported by:





# Four Focus Areas



## World Class Research + Training

Amii supports world-class research at UAlberta – funding professors, researchers and students.



## Grow SME AI Capacity

Amii guides AB-based startups & SMEs as they build their own AI capabilities to drive their next wave of competitive advantage and growth.



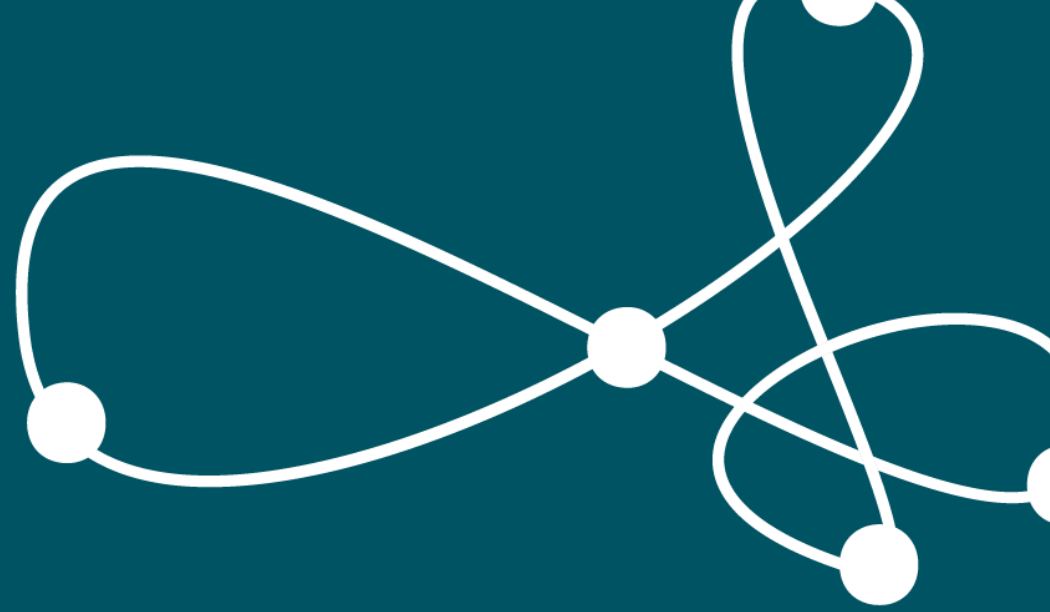
## Attract Research Labs

Amii works with large corporations to set up research labs to leverage UAlberta's world-class researchers and grads.



## Upskill Alberta's Workforce for AI

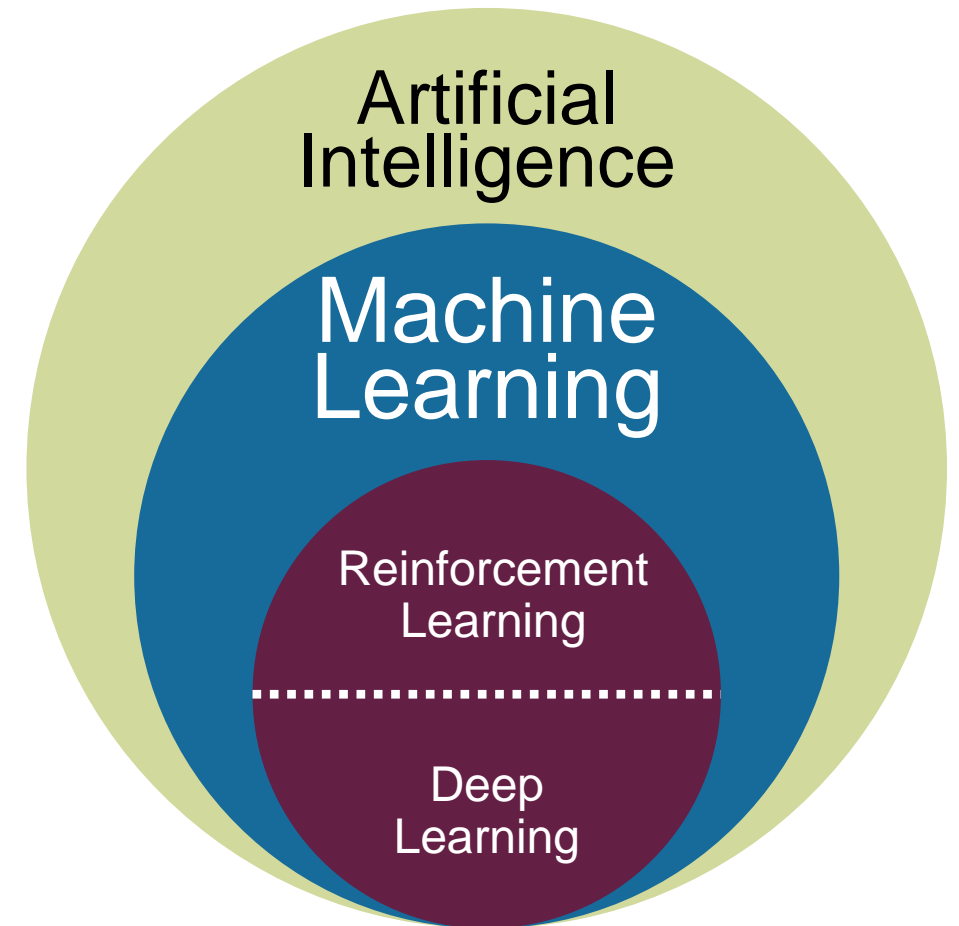
Amii provides training and mentorship for Alberta workers to drive AI literacy and ensure our workforce has the skills to succeed in AI



What is AI?

# Artificial Intelligence & Machine Learning

- **Artificial Intelligence** gives machines the ability to perform tasks that normally require human-level intelligence
- **Machine Learning** allows computers to learn from and adapt to data without explicit programming for the new data



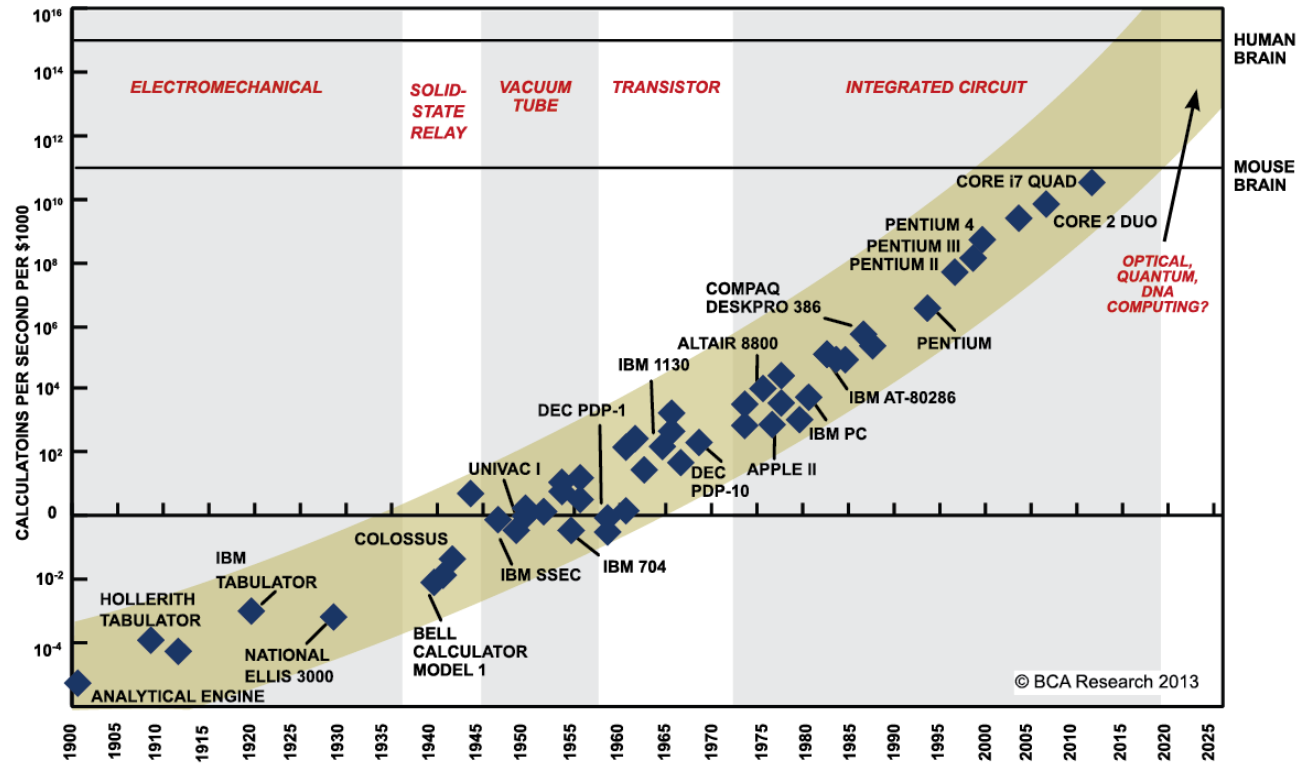
Ultimately, AI is about making **predictions from data**



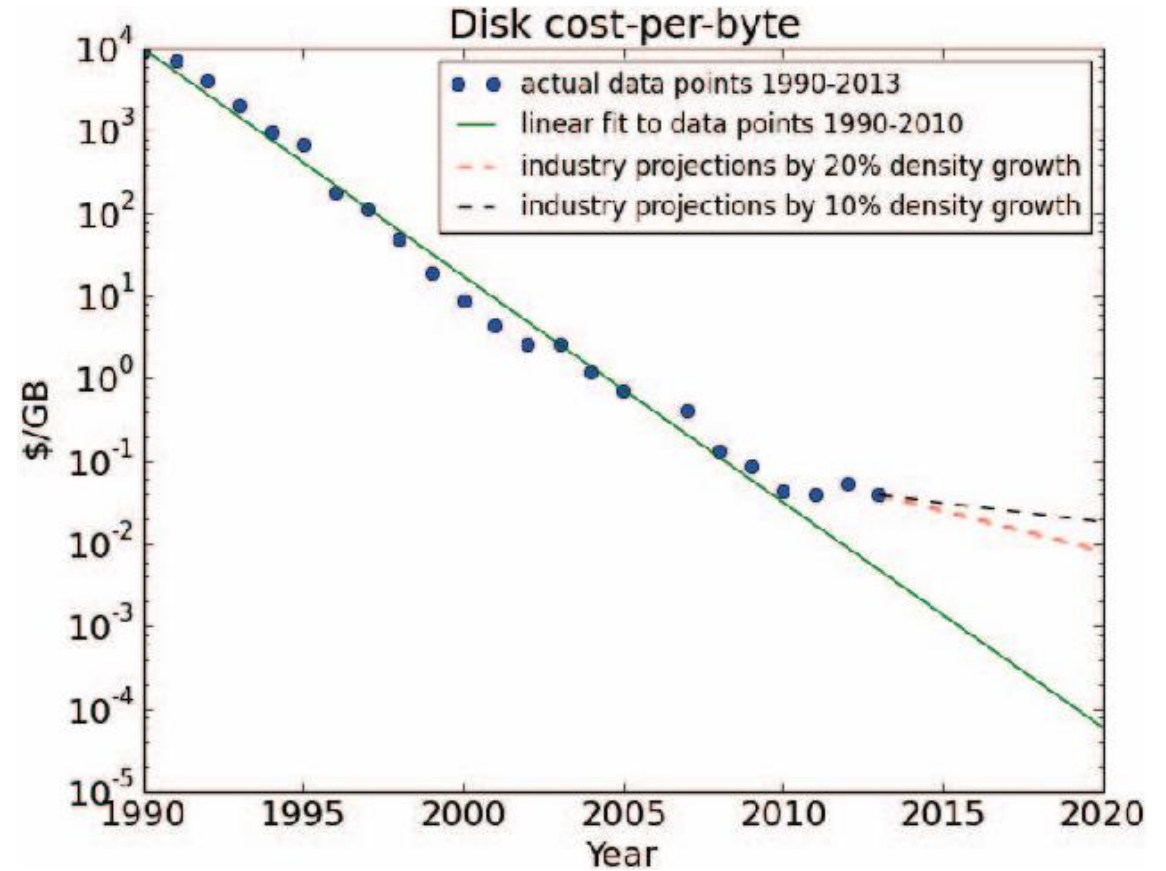
Why Now?



# Moore's Law + Kryder's Law



SOURCE: RAY KURZWEIL, "THE SINGULARITY IS NEAR: WHEN HUMANS TRANSCEND BIOLOGY", P.67, THE VIKING PRESS, 2006. DATAPPOINTS BETWEEN 2000 AND 2012 REPRESENT BCA ESTIMATES.



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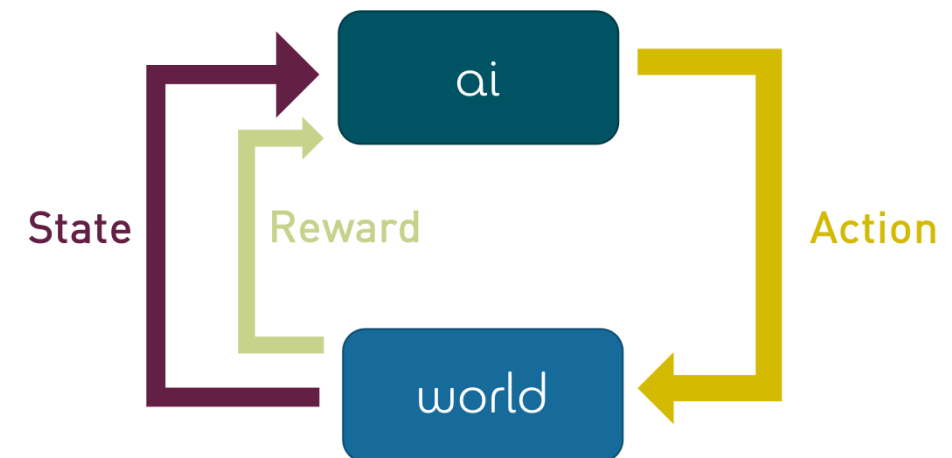
# Cheaper Prediction

- As the cost of something drops, the more it is used
- The **cost of prediction is dropping**
  - Cheaper computing power = more processing
  - Cheaper storage = more data
  - More efficient algorithms = more powerful learning algorithms
- Drops in the cost of prediction **increase the value** of data, sensors, connectivity
- Data improves the value you get out of prediction – to a point...

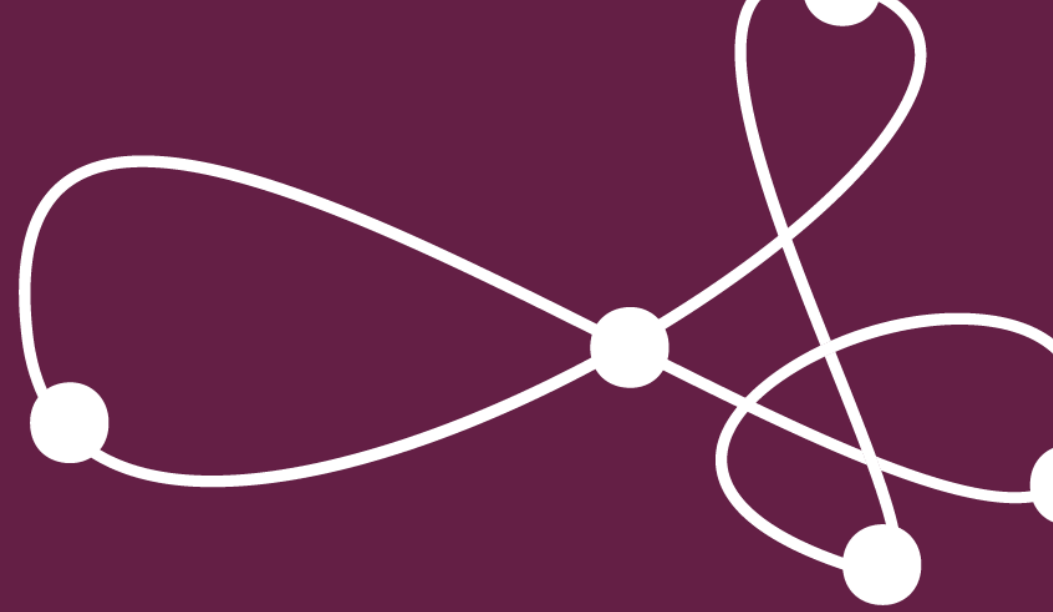


# Autonomously Interacting with the World

- Increasingly, sensor and control networks **operate autonomously**
- Reinforcement learning systems **continually learn** from their ongoing operation for long-term optimization
- RL systems update operations in **changing** environments
- Used for **optimizing** industrial control, autonomous drones/robots, edge computing, etc.



Every company is  
a data company



Data-driven predictions will  
change every industry



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