Impacts of AI: COMP3800-03
About Artificial Intelligence
Wentworth Institute of Technology

Becoming an AI System

Stage 1: Calculations (mathematics)
Stage 2: Execution (algorithms/methods)
Stage 3: Analysis (regression)
Stage 4: Supervised Learning (optimization)
Stage 5: Unsupervised Learning (problem solving)
Stage 6: Unsupervised Asking (rhetorical learning/bounded action)
Stage 7: Unsupervised Action (doing/unbounded action)

Future of AI

Narrow
Intelligence

2010 - 2015

Broad
(AI for Enterprise)

Today

Future AI

General AI

2050 and beyond

General AI

General AI refers to machines that can perform any intellectual task a human can.

Currently AI does not have the ability to use previous experiences to come up with new creative ideas

Glimpse at a plausible 2035

What's in store for the future?

- Prediction machines working with human judgement
- Move over apps, bots are here
- Blockchain technology
- Nano bots
- Embodied cognition

Median Expert Prediction for AGI (2040)

Median Expert Prediction for ASI (2060)

1900

2000

Today

2100

waitbutwhy.com

IS AI GOING TO REPLACE ME?

Human advantages over machines

Since AI systems depend on data, then humans have two advantages:

- Humans have world knowledge, hence awareness of self in relation to the environment.
- Humans are better at decision making with little data or in rare circumstances.

Humans have three types of data that machines don’t:

- Data from our senses, smell, taste, touch, hearing and intuition
- We are the ultimate arbitrators of our own preferences
- Privacy concerns restrict the data available to machines

•Machine learning deals with the problem of extracting features from data as to solve many different predictive tasks:

- **Forecasting** (e.g. Energy demand prediction, finance)
- **Imputing missing data** (e.g. Netflix™ recommendations)
- **Detecting anomalies** (e.g. Security, fraud, virus mutations)
- **Ranking** (e.g. Google™ search, personalization)
- **Summarizing** (e.g. News zeitgeist™, social sentiment)
- **Decision making** (e.g. AI, robotics, compiler tuning, trading)

When to Apply Machine Learning

- **Human expertise is absent** (e.g. Navigating on Mars)
- **Humans are unable to explain their expertise** (e.g. Speech recognition, vision, language)
- **Solution changes with time** (e.g. Tracking, temperature control, preferences)
- **Solution needs to be adapted to particular cases** (e.g. Biometrics, personalization)
- **The problem size is too vast for our limited reasoning capabilities**
  (e.g. Calculating webpage ranks, matching ads to Facebook™ pages)

Three major AI calibers

Artificial Narrow Intelligence (ANI):

Sometimes referred to as *Weak AI*, Artificial Narrow Intelligence is AI that specializes in *one* area. ANI can beat Jeopardy! World champion. Ask it to figure out a better way to store data on a hard drive, and it'll look at you blankly.

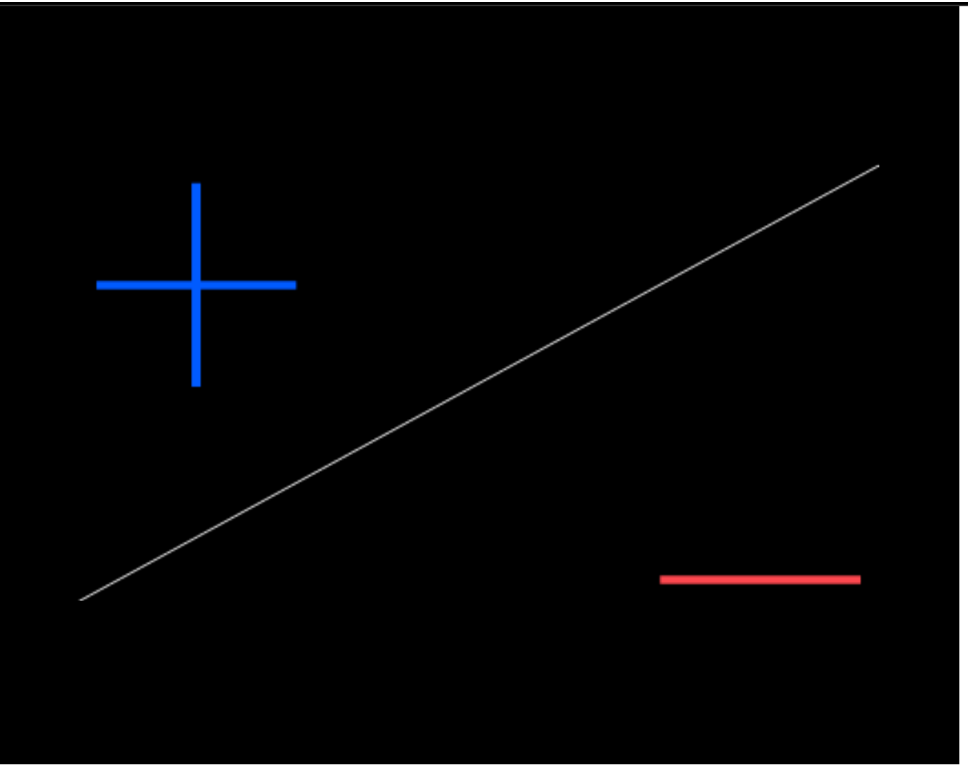
Artificial General Intelligence (AGI):

Sometimes referred to as *Strong AI*, or *Human-Level AI*, Artificial General Intelligence refers to a computer that is as smart as a human *across the board*—a machine that can perform any intellectual task that a human being can.

Artificial Superintelligence (ASI):

Oxford philosopher and leading AI thinker Nick Bostrom defines superintelligence as "an intellect that is much smarter than the best human brains in practically every field, including scientific creativity, general wisdom and social skills." Artificial Superintelligence ranges from a computer that's just a little smarter than a human to one that's trillions of times smarter—across the board.

THE DEBATER PROJECT



Project Debater

Project Debater is the first AI system that can debate humans on complex topics. The goal is to help people build persuasive arguments and make well-informed decisions.

Watch a live debate

What is Project Debater

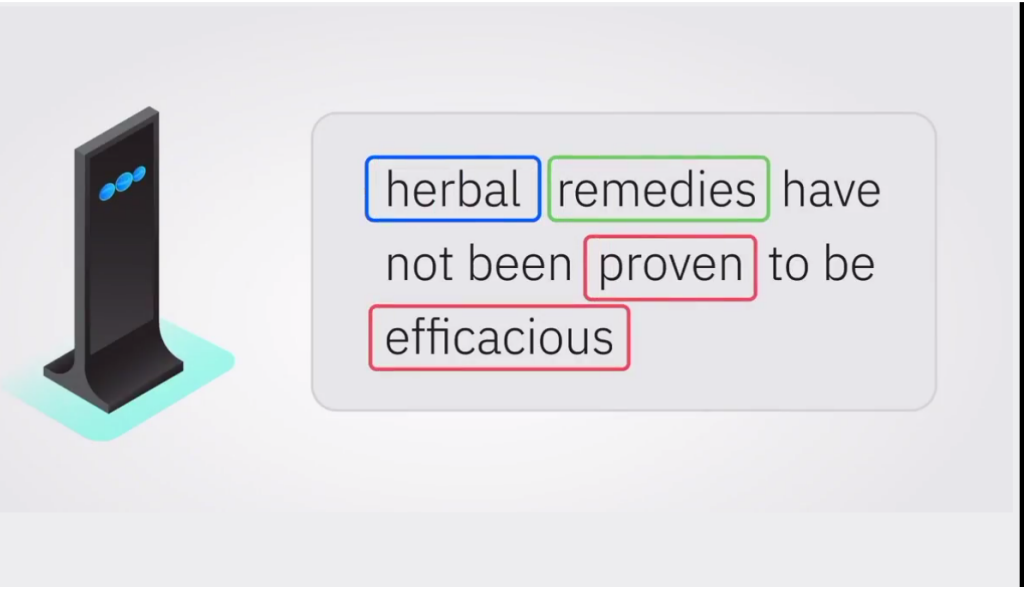
Project Debater is the first AI system that can debate humans on complex topics.

It digests massive texts, constructs a well-structured speech on a given topic, delivers it with clarity and purpose, and rebuts its opponent.

Why teach a machine how to debate

Debate enriches decision making, helping people weigh the pros and cons of new ideas and philosophies.

We debate not only to convince others of our own opinions, but also to understand and learn from each other's views.



Step 1
Understanding a topic

Step 2
Argument construction

Step 3
Content organization

Step 4
Constructing an argument and rebuttal

Step 1
Understanding a Topic

Project Debater's knowledge base consists of around 10 billion sentences, taken from newspapers and journals.

Using AI natural language processing technologies, Project Debater is able to recognize the same concept, even when stated many different ways.

Step 2
Augment Construction

The first step is to build an opening speech to defend or oppose this motion.

Project Debater searches for short pieces of text in the massive corpora that can serve this purpose.

Step 3
Content Organization

In order to debate effectively, the Project Debater needs to construct the strongest and most diverse arguments to support its case.

Project Debater does this by removing redundant argumentative texts, selecting the strongest remaining claims and evidence, and arranging these by theme, creating the base of the narrative to support the motion.

Step 4
Constructing an Argument and Rebuttal

Project Debater pieces all the selected arguments together to create a persuasive speech that lasts approximately four minutes.

The next step is to listen to the opponent's response, digest it and build the rebuttal.