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COMP 2019

Week 1
Introduction

Learning Objectives

- Explain the term Artificial Intelligence (CO1)

- Understand the capabilities and limitations of modern A.I. systems (CO1)

What is AI?

- Strong AI: programs that act like humans
    - *``[AI is] … nothing less than to build a machine on the model of man, a robot that is to have its childhood, to learn language as a child does, to gain its knowledge of the world by sensing the world through its own organs, and ultimately to contemplate the whole domain of human thought.”*   [Joseph Weizenbaum, MIT]
- **Applied AI: Programs that act rationally**
    - "Smart" systems that are not necessarily modelled like humans
    - Problems that are impossible to solve by hand-crafting an algorithm
- Cognitive Simulation:
    - Test theories about how the human mind works
    - Create a program and evaluate its performance

Traits of AI

- Perception

- Manipulate Objects

- Natural Language Understanding

- Learning

- Planning

- Knowledge Representation

- Reasoning
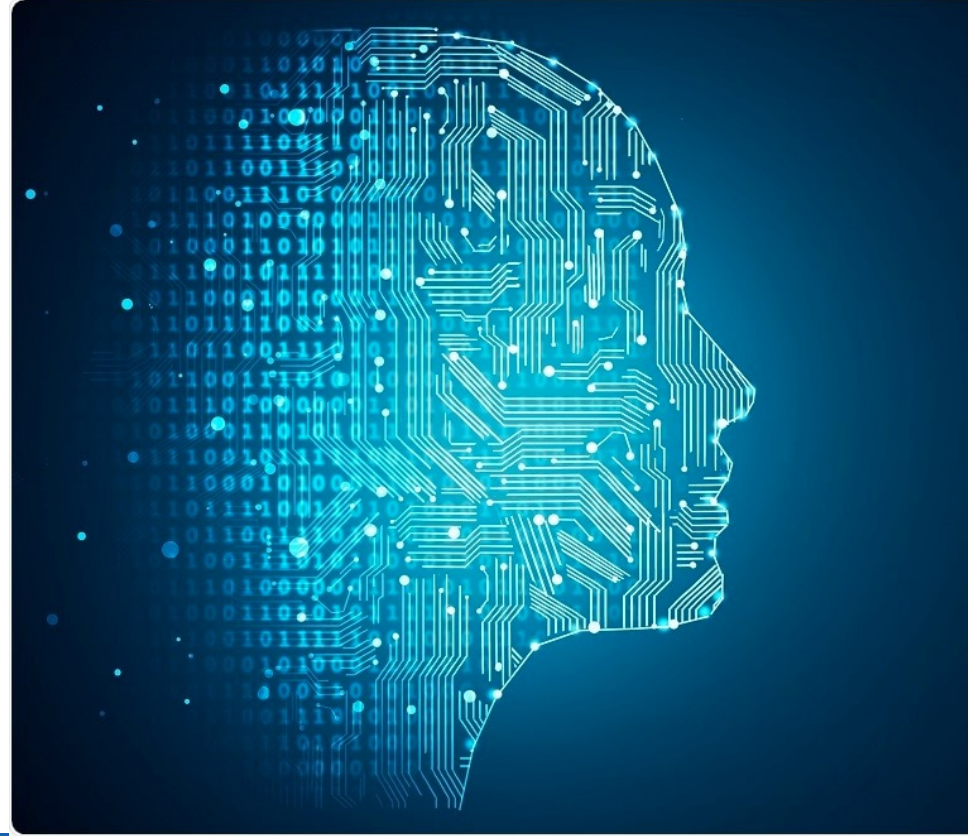
mite	**container ship**	**motor scooter**	**leopard**
mite	container ship	motor scooter	leopard
black widow	lifeboat	go-kart	jaguar
cockroach	amphibian	moped	cheetah
tick	fireboat	bumper car	snow leopard
starfish	drilling platform	golfcart	Egyptian cat

A group of people shopping at an outdoor market.

There are many vegetables at the fruit stand.

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https://www.youtube.com/watch?v=_PC-V5GJP6Q

https://www.youtube.com/watch?v=vjSohj-Iclc

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https://www.youtube.com/watch?v=tlThdr3O5Qo

Chatbots & Assistants

```
Welcome to

       EEEEEE  LL      IIII  ZZZZZZZ  AAAAA
       EE      LL       II        ZZ  AA  AA
       EEEEE   LL       II       ZZZ  AAAAAAA
       EE      LL       II      ZZ    AA  AA
       EEEEEE  LLLLLL  IIII  ZZZZZZZ  AA  AA

Eliza is a mock Rogerian psychotherapist.
The original program was described by Joseph Weizenbaum in 1966.
This implementation by Norbert Landsteiner 2005.


ELIZA: Is something troubling you ?
YOU:   Men are all alike.
ELIZA: What is the connection, do you suppose ?
YOU:   They're always bugging us about something or other.
ELIZA: Can you think of a specific example ?
YOU:   Well, my boyfriend made me come here.
ELIZA: Is it important to you that your boyfriend made you come here ?
YOU:   He says I'm depressed much of the time.
ELIZA: I am sorry to hear that you are depressed.
YOU:   It's true. I am unhappy.
ELIZA: Can you explain what made you unhappy ?
YOU:   ▮
```

Jerry: XiaoIce, will it rain tomorrow?

XiaoIce: Tomorrow the weather in Beijing will be nice with a maximum high of 25*C. No rain to get you soaked.

Jerry: How about the day after tomorrow?

XiaoIce: The day after tomorrow, the weather in Beijing will also be fair, with a max high of 23 C.

Jerry: What about Seattle?

XiaoIce: Yes sir, I've got the answer. The day after tomorrow, Seattle will be cloudy with a max high of 30 C. Perfect for going outside.
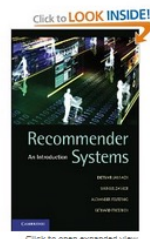
Machine Translation

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AlphaGo   Lee Sedol

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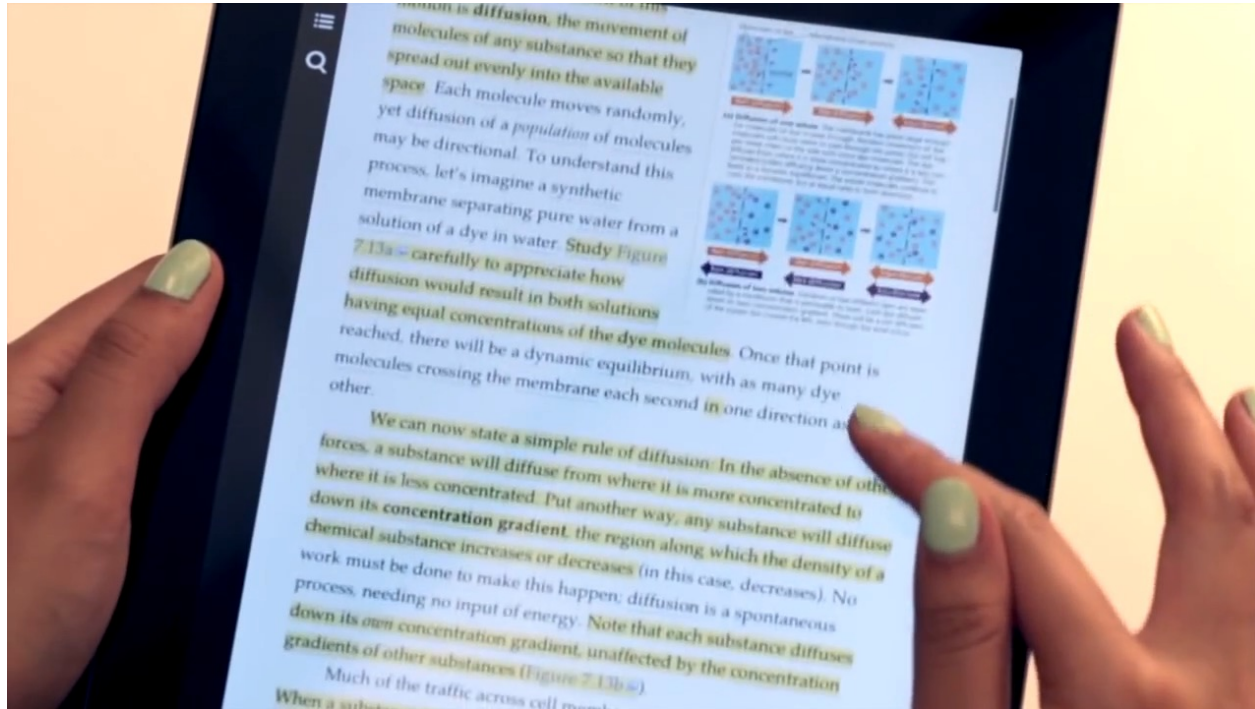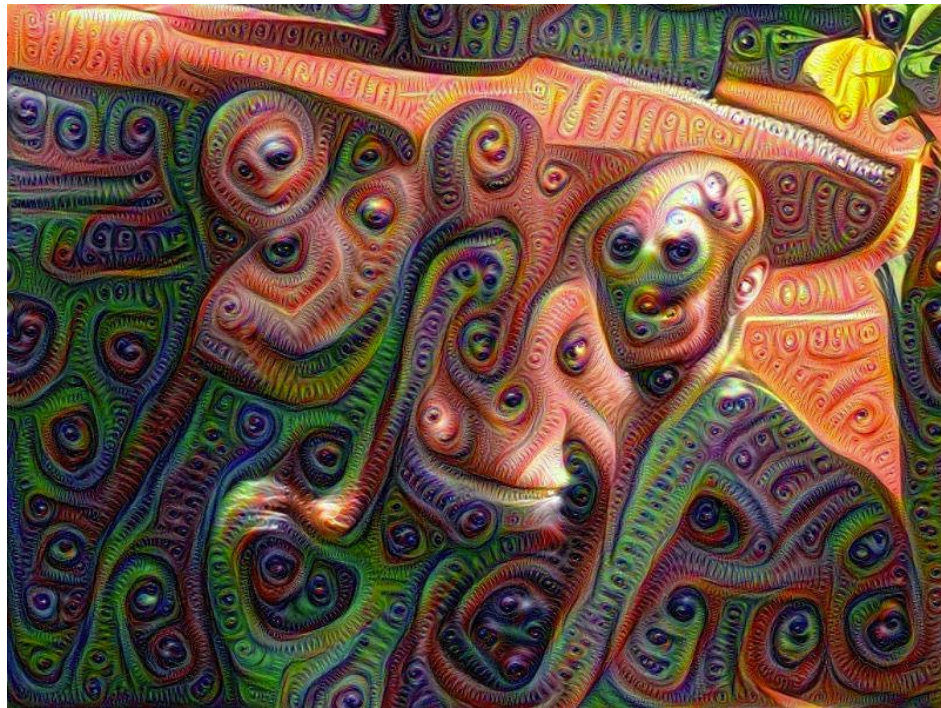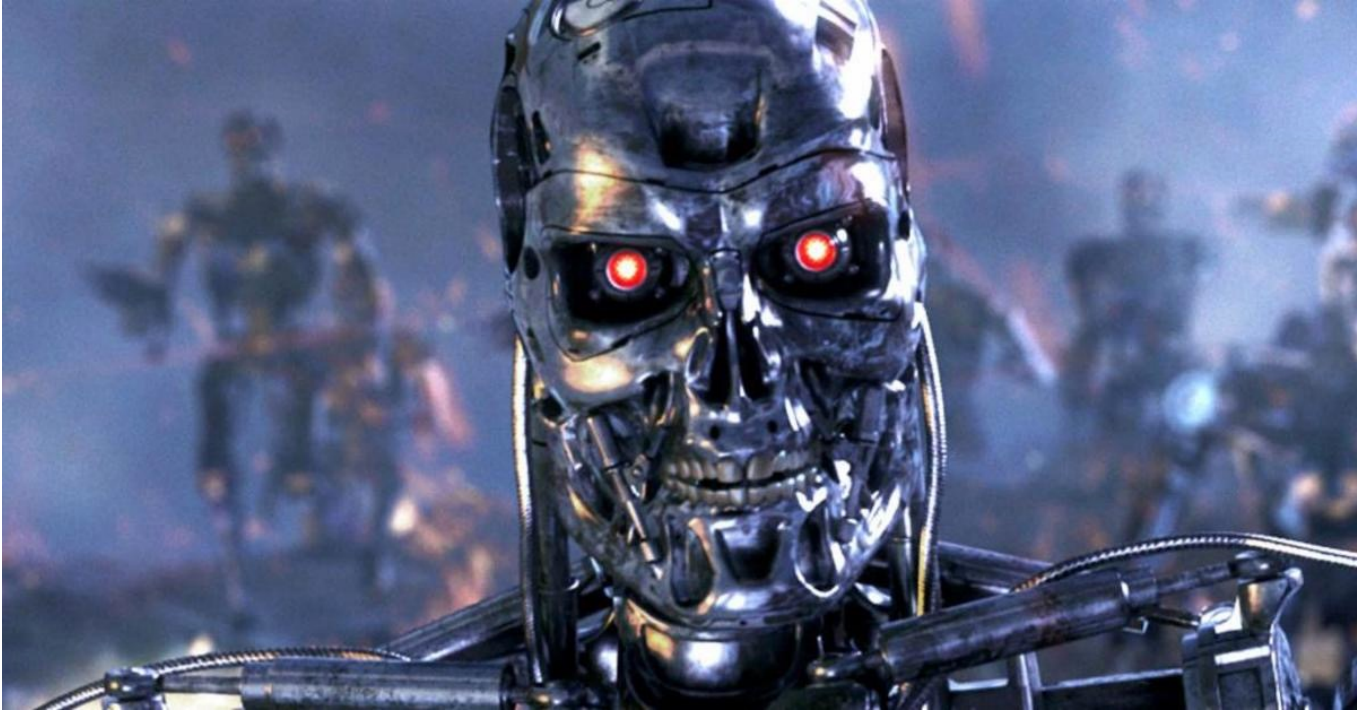
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MACHINE INTELLIGENCE 2.0

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Summary

- Artificial Intelligence has been and will be at the core of nearly everything
- There is a lot of hype in the media. We must understand the technology and its limitations to make informed judgments to distinguish reality from fiction
- AI technology has become a commodity, but applying it in the right way can be difficult

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Questions?