# 15-494/694: Cognitive Robotics

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Lecture 18:

LLM Project Ideas
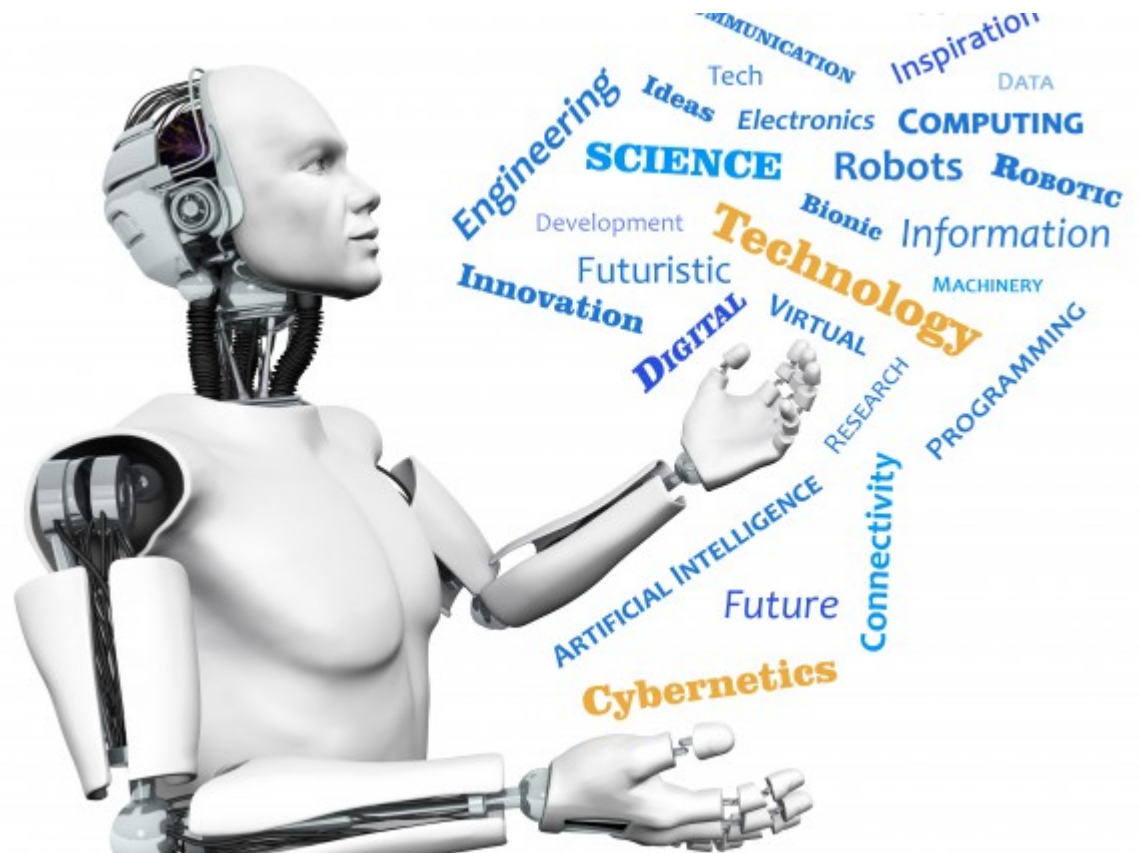


Image from http://www.futuristgerd.com/2015/09/10

# Zero-Shot Learning

- Given a state, provide a word that rhymes with the name of that state's state flower.
  - Pennsylvania
    - Mountain Laurel → coral

# One-Shot Learning

- List states that do not contain "a" in their name. For example: Missouri.

# Chain of Reasoning (1)

Given a state, list the unique letters in its name, in alphabetical order.

Q: Ohio

A: "h", "i", "o"

Q: Iowa

A: "a", "i", "o", "w"


Q: Pennsylvania

# Chain of Reasoning (2)

Give a list of states where the list of letters in the state name does not include the letter "a". Example: Ohio does not include "a". Negative example: Iowa does include "a" so it should not be part of the list.

# Few-Shot Learning

- Same idea as one-shot learning, but with several examples.

# Chain of Reasoning

- Give names of actual businesses that include an even number in the business name.

- Give names of actual (not fictional) businesses that include an even number in the business name, and demonstrate that it is even. For example, "Studio 54", the number is 54, and 54 divided by 2 is 27 with remainder 0, so 54 is even.

# Intent Recognition

- Recognize intent independent of precise wording (used in Alexa skills).
  - Ordering a pizza
    - "I want to order a pizza"
    - "I have a pizza order for you"
    - "I need a large pepperoni"
  - Arranging payment
    - "Can I put this on my Visa card?"
    - "What's the damage?"
    - "How much?"

# Planning

- Provide a problem to solve, and have the reasoner output solution steps in a notation that we can easily translate to robot actions.