Computational Linguistics

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What is Computational Linguistics?

- Also known as Natural Language Processing (NLP)
- A branch of artificial intelligence that deals with analyzing, understanding and generating the languages that humans use naturally in order to interface with computers.

http://cleverbot.com/

Human Language

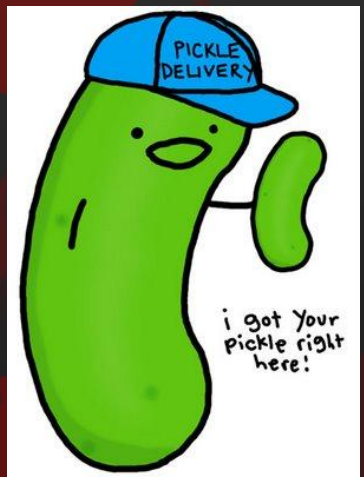
- Humans acquire language through social interaction in early childhood.
- Children generally speak fluently when they are around three years old.
- Humans use distinct words, each with its own meaning. These words are strung into sentences.
- We are the only species to do that.

Computer Language

- Tasks humans struggle with can be performed easily by computer programs
- Tasks humans can perform effortlessly remain difficult for computers.
- We can write a computer program to beat the very best human chess players, but we can't write a program to identify objects in a photo or understand a sentence with anywhere near the precision of even a child.

Examples

- “In a pickle” - In an awkward or embarrassing situation.
- "Bite off more than you can chew" - Take on more than one can handle.
- "Fill someone's shoes" - Take someone else's place.
- "Curiosity killed the cat" - This idiom means that inquiring into things can be dangerous.



Humans vs. computers

The Brain

- The human brain receives huge amounts of information from all the senses at a constant rate.
- It tends to learn and adapt very quickly to its environment and surroundings.

The Computer

- Computer programs at research labs are constantly learning anything that the programmers give them.
- Smarter programs are now able to classify pictures of objects it never saw before into different categories.

- Voice recognition engines are developed by feeding the program with thousands of different voices from entire towns so that it could pick up patterns in speech and learn to recognize them.

- OCR (optical character recognition) programs pick up new tips and patterns as it observes the different styles of writings from its ever increasing database.

WATSON Super Computer

Watson

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  in nat
- Name
  presi
  Watsc
- Recei
  millio
- Consistently outperformed its human opponents on the game's signaling device

http://www.youtube.com/watch?v=FCBIryWr4c8

- Human players usually
  ses faster
  pecially
  events it
  opular
  before it
  ponse.
  sistently
  me on
  the buzzer once it had generated a response
- Was immune to human players' psychological tactics.

Thanks for watching!