

The Currency of Thought

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When you are solving a problem, how are you doing that? What is that little conversation going on in your conscious mind and just how are we doing that? This paper will explore the idea that we use language as the currency and medium for thought.

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1. Introduction

The mythical goal of Artificial Intelligence is to create a machine which can think like HAL in the movie 2001. However, we are no where close to reaching this goal. Creating a self-conscious sentient artificial intelligence is just way beyond anything we are even planning.

2. Language is the currency of thought

Just as money is used as a currency to exchange goods and services, the main purpose of this paper is to argue that language itself is used to directly exchange ideas and solve problems. Language is the 'medium' by which these things actually occur. Language separates us from the rest of the animal kingdom, not just in our ability to communicate, but also our ability to actually think.

3. How are words represented?

In most AI approaches, the words of a language are tagged and categorized to give them their meaning. The way this actually works in the neural networks of our brain is that when we get input from our senses, such as when we hear the word 'car', it just randomly fires into the network and lights up some specific pathway. Every time we hear the word 'car', it lights up the same pathway. When we see a 'car', with our sense of vision, this also lights up a pathway and when we learn a word, it just means we attach the two, so that when we hear the word 'car', it also lights up the pathway when we see the car, so the two are connected.

4. How are sentences represented?

Sentences are also a kind of network where words are linked together. If I have the sentence 'The car is blue'. This links everything we know about 'car' with everything we know about 'blue'. So when you hear this sentence it burns a new pathway between 'car' and 'blue'. Every time you hear the word 'car' used in a sentence, a new pathway is burned into your neural network. This allows you to instantaneously access every thing you have ever heard about the word 'car'.

5. How do we answer questions?

Once we have this connected network of words, we can

ask a question like 'What color is the car?' What happens is that we light up the network for color and car, like pouring water into network which eventually run into each other and what we find in common between the two is 'blue' which is the 'what color' we are seeking. So no further representation or tagging is needed. Answers will simply fall out of the network as a result of lighting up pathways in the network.

6. How do we solve problems?

Suppose we need to solve a problem which doesn't have any set answer like 'What color should I paint my car?'. The way we do this is by lining up a series of statements in sentence format that all evaluate to 'true' or do not contradict each other. To solve this, we can propose 'I will paint my car red'. But there are other things triggered by this sentence. Maybe your girlfriend said 'I hate red cars'. This is recognized as a contradiction to the first statement. Therefore this set of sentences cannot evaluate to true. So you pick another color like 'green'. So if I change my mind to paint the car green, this is not in conflict with your girlfriend. Therefore, all these statements evaluate as true and you have solved your problem.

7. Conclusions

The conclusion is that we can perform extremely complex question answering and problem solving tasks by just manipulating a network which is simply populated by input sentences. There is no underlying representation, no categorization, and no tagging or pattern matching. Everything is simply represented and accessible by simple reference. What we think of as our 'consciousness' is actually just the brightest pathway that is lit up in our mind at the time. It is this constant internal dialog which we are using to answer questions and solve problems. This is in stark contrast to existing 'machine learning' AI strategies that can do little more than recognize patterns. Very few problems can be solved by pattern matching alone. Until we start looking at language as the currency and engine of intelligence, we will not be able to succeed in making anything remotely artificially intelligent.