

Context Assisted Understanding

Some would agree that in order to accomplish the ultimate task of creating an artificial intelligence on a scale that will dramatically impact human existence forever, there must be a certain level of understanding within the system. Based on the complexity of the task or idea, even people have a difficult time understanding the ideas behind sentences. Sentences without the meaning associated with it are simply a string of words, grouped in sets of letters.

What – will be done?

I would like to explore understanding taken into account context of a variety of factors matched against past experience. Examples of these context factors include the following:

1. Location: the place the statement was said.
2. Time frame: The time of day, season of year, day of week, etc.
3. Source of information – information from a child is usually different than from an adult, information from a professional is different than a layperson
4. other variables, though additional processing would be needed such as:
 1. goal of the individual / group
 2. learning of new context factors based on pattern recognition

How – to tackle this problem?

1. The system will attempt to analyze input communication, given a variety of context input variables that a robot would have the ability to take in during the course of a communication exchange.
2. The system will be “born” at a particular time, then learning instances will take place, that is, learning of facts and associated context factors simultaneously. Essentially, facts will have associated context factors.
3. When input does not agree with path facts and their associated contexts, it may be discarded as nonsense or not pertinent to the storyline. Perhaps it was a statement thrown in intentional to throw off the system.
4. Analysis of current input against past learned context associations and facts, via dictionary synonyms, and other means.
5. When system is in different contexts, words will mean different things, based on experience or learning; an adjustable fixed context concept is applied so that words will be more precise in different situations.

Assumption of the verbal communication (text sentences)

- The input will be garbled at times, with the assumption that informal speech is less coherent than formal speech.
- The input may not be coherent, but a context may be formed of what the speaker (text) is talking about.

This research is inspired and will attempt to expand the research of Jeff Hawkins. The following is an excerpt:

“Hawkins says the main difference between his idea and others is that the other methods try to copy human behavior using the wrong notion of how the brain works. The brain doesn't produce an output for every input, Hawkins says. Instead, it stores experiences and sequences and makes predictions based on those memories. ... [Q] How would a machine that worked more like the brain do a better job? [A] Current computers just don't understand what is being done, and they don't do a good job. The problem with something like speech recognition is that computers are trying to just recognize speech. They take some pattern and try to match it against some template. We understand speech, but with current systems, there is no understanding. So when you have real data coming in that is messy for the most part, you can't match it.”¹

Questions to answer:

- The importance of the topic. Does it have theoretical or practical value? Does it provide a good training opportunity?
Yes, learning techniques applicable to general situations is vital to adaptable software. It has value with understanding.
- The suitability of the topic. Do you have the proper background knowledge to solve this problem? Can you finish it within the required time?
I will focus the scope of the software with a subset of practical examples to test the theory to finish within time.
- The current status of the topic: What has been done on this topic? What can you add to it?
Organizations are dedicated to understanding such as Association for Uncertainty in Artificial Intelligence. Jeff Hawkins has written a book called 'On Intelligence' discussing how the brain stores experiences and sequences and makes predictions based on those memories. More research will be done to determine related material.

<http://www.aaai.org/AITopics/html/current.html> October 27, 2004: [Getting intelligent about the brain](#). Interview by Richard Shim and Ina Fried. CNET News.