

Elephant

Elephant was proposed by John McCarthy as a programming language centered on speech acts. Its supposed domains are where a program is used to interact with humans or to exchange data between companies or organizations.

Inputs and outputs from Elephant programs are in human-readable form and represent meanings such as promises, questions and answers. Elephant programs themselves do not need data structures, as they can refer to past events in their execution similarly to the way a human would remember events from their memory. These programs can also be described with sentences of logic.

A central example in McCarthy's description of Elephant is that of booking an airline ticket. The most basic form of it looks as follows:

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if  $\neg$ full flight then accept.request make commitment admit(passenger, flight).
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When a program makes a commitment, it promises to fulfill this request whether or not is actually beneficial for the subject. At any point in time it is possible to get a list of what commitments the program has made. A list of previous events in execution is kept in the Elephant interpreter. When one wants to look at those events, the compiler constructs suitable data structures containing this information. McCarthy wants to avoid data structures as far as possible in Elephant, but states that it will likely be bad to totally avoid them (McCarthy 1998). The simplest case for when to get information of previous events could for example be the account balance of a person at a given point in time.

One piece of information that I feel McCarthy does not make much of an effort of talking about is the complexity of speech acts. He does write "It is a contention of this paper that many uses of speech acts do not require many of the intellectual capabilities of humans." (McCarthy 1998). To this I would like to respond that every speech act would have to be carefully considered before it would be implemented, since they most likely would be easily ambiguous and subject to social and cultural differences not only between countries but also between organizations.

McCarthy states in his conclusion of the Elephant proposal (McCarthy 1998) that "Human speech acts involve intelligence. Elephant 2000 is on the borderline of AI, but the article emphasizes the Elephant usages that do not require AI." I disagree with the last phrase, since a central part of the article is to describe a system that could be used for interacting with people. If Elephant is supposed to provide a way for humans to interact with computer systems using some speech acts, without them being on the same low level as say *if* or *else*, there would have to be some form of AI present. Otherwise the interface would be the same as for conventional programming languages, where humans have to learn what the speech acts actually mean to the computer.

References

McCarthy, John (1998). Elephant 2000: A programming language based on speech acts.
<http://www-formal.stanford.edu/jmc/elephant/elephant.html>, available 09/12/2012.