

Human-Computer Communication in Natural Language

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Abstract

The greatest barrier to global communication today is a widespread lack of computer literacy. This barrier may be overcome in two ways: one is the education of large populations so that they will be able to use today's computers; the other is the development of computers which anyone can freely communicate with in his or her natural language.

The first approach requires that many people of diverse backgrounds must adapt to the machines' interfaces and learn the commands of programming languages and operating systems. As a consequence, the cultural diversity of the users will be diminished because of the time and effort needed to acquire and maintain computer literacy.

The second approach adapts computers to the natural communication conventions of humans. By obviating the need to acquire computer literacy, the possibility of global communication is opened to all people, regardless of their cultural background or level of education. As a precondition, the cultural diversity of the users must be modeled in the machines, at least in part.

Why has only the first approach been pursued so far, frustrating users with ever more complicated graphical user interfaces which offer hundreds of different icons to click through? Wouldn't it be much more comfortable to simply talk with the machine?

The answer is straightforward: so far, theories of language have been avoiding the question of how communication in natural language really works. Instead they have been dealing with peripheral issues such as methodology (behaviorism), innate ideas (nativism), and scientific truth (model theory).

This talk provides the foundation for the second approach. Its central topic is modeling the functioning of natural language communication. 'Database semantics' explains how information is transferred from the speaker to the hearer by means of natural language.