

OU team works on smart computer

The student paused at the computer keyboard, then typed, "I gave the red, rosy apple to my teacher."

The computer's response appeared on the screen. The computer admitted that it had never seen an apple. It asked, "What is an apple?"

A computer that will understand English commands and have a human-like awareness of its own sensory, motor and reasoning capabilities is the goal of a new software system being developed by two OU and University professors.

Troy resident Peter Binkert, linguistics, and Christian Wagner, engineering, say the use of the computer to analyze (parse) English sentences is not new.

Their program differs from most current research by relating the meaning of words to the capacities of computer hardware — for example, to a robot's ability to see and manipulate an object.

ONE KEY to the design is a new grammar developed by Binkert, a simplified grammar with no transformations in syntax.

This allows the computer to describe a word in relation to every other word in a sentence and to provide an unambiguous interpretation of that word.

Binkert is author of the book "Generative Grammar Without Transformations" just published by Mouton. The book describes how the grammar, called residential grammar, simplifies and is more accurate than theories first advanced by linguistic great Noam Chomsky in 1955.

If Binkert and Wagner are successful, the student in the above illustration would describe what an apple is. In any future inquiries, the computer would know what an apple is and identify its proper use no matter where it appeared in a sentence.

THE RESEARCHERS have applied to the National Science Foundation for a grant to support their research. The new system would include a main-frame computer, robotic manipulator and a vision system.

The software package will include the non-transformational grammar parser already developed by Binkert and semantic and pragmatic analyzers. They say the robotic system will be able to respond to natural language sentences with genuine comprehension in terms of its own hardware capabilities.

BINKERT HAS been parsing English sentences with his non-transformation

grammar for about a year with great success. He began work on the new grammar after he encountered continuing problems in a course in syntax.

He was using a text that depended upon traditional theory and said the book raised more problems than it did answers. It became clear, he said, that the entire concept was in error.

Binkert and Wagner say that despite all the efforts to develop a fifth genera-

tion of computers, the need for computer systems that are both intelligent and easy to use is still virtually unmet.

What is needed, they say, "is a computer system that is more than just a user — friendly interface between a human user and more traditional software functions. What is needed is a computer system with human structure for intelligence and adaption to its environment."

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