Computer smart as a 4-year-old

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Artificial and natural knowledge researchers at the University of Illinois at Chicago have IQ-tested one of the best available artificial intelligence systems to see how intelligent it really is.

Turns out–it's about as smart as the average 4-year-old, they will report July 17 at the U.S. Artificial Intelligence Conference in Bellevue, Wash.

The UIC team put ConceptNet 4, an artificial intelligence system developed at M.I.T., through the verbal portions of the Weschsler Preschool and Primary Scale of Intelligence Test, a standard IQ assessment for young children.

They found ConceptNet 4 has the average IQ of a young child. But unlike most children, the machine's scores were very uneven across different portions of the test.

"If a child had scores that varied this much, it might be a symptom that something was wrong," said Robert Sloan, professor and head of computer science at UIC, and lead author on the study.

Sloan said ConceptNet 4 did very well on a test of vocabulary and on a test of its ability to recognize similarities.

"But ConceptNet 4 did dramatically worse than average on comprehension—the 'why' questions," he said.

One of the hardest problems in building an artificial intelligence, Sloan said, is devising a computer program that can make sound and prudent judgment based on a simple perception of the situation or facts–the dictionary definition of commonsense.

Commonsense has eluded AI engineers because it requires both a very large collection of facts and what Sloan calls implicit facts–things so obvious that we don't know we know them. A computer may know the temperature at which water freezes, but we know that ice is cold.

"All of us know a huge number of things," said Sloan. "As babies, we crawled around and yanked on things and learned that things fall. We yanked on other things and learned that dogs and cats don't appreciate having their tails pulled." Life is a rich learning environment.

"We're still very far from programs with commonsense–AI that can answer comprehension questions with the skill of a child of 8," said Sloan. He and his colleagues hope the study will help to focus attention on the "hard spots" in AI research.

Study coauthors are UIC professors Stellan Ohlsson of psychology and Gyorgy Turan of mathematics, statistics and computer science; and UIC mathematical [computer science](#) undergraduate student Aaron Urasky.

Provided by University of Illinois at Chicago