Shared theories on thought could lead to smart machines

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Machines can respond to simple electronic commands such as "stop," "start" and "grind," but they are not very good at figuring out complex orders or unstated common sense.

Command a machine to "paint the computer case before you box it," or "provide power to the computer before you switch it on" and it is very possible the machine will box the product before the case is dry, or plug and then unplug a computer before switching it on. The meaning of the word "before" is quite different in these two cases. Ontologists, researchers who make it their business to understand the thought process, hope to end the age of stupid machines.

Last month, ontologists who have created some of the most advanced logic systems, agreed at a National Institute of Standards and Technology (NIST) workshop to share their leading-edge concepts on such comprehensive ideas as time, space and process. The promise to cooperate, expressed in a 10-item communiqué issued at the end of the two-day workshop, eventually could lead to software programs that will equip machines with mutually compatible frames of reference, enabling them to interpret and act on commands with near human common sense.

Efforts to equip machines with artificial intelligence capacity have, up to now, been relatively rudimentary. Software programs might, for instance, give machines used to make furniture considerable "understanding" of terms and frames of reference used in the furniture business. But such collected knowledge known as a "lower ontology" is

of limited use, and human operation is necessary at virtually every step in the manufacturing process. A machine empowered by programs that incorporate expanded frames of reference of such "higher ontologies" as space and cost might be able to begin making design and shipping decisions virtually on its own.

"We believe we have planted an historic stake in the ground by enabling the leading upper ontologists throughout the world to come together and sign this agreement to cooperate," says Steven Ray, chief of NIST's Manufacturing Systems Integration Division and coordinator of the Upper Ontology Summit at NIST. The ontologists will use the Internet and future meetings to exchange information on their systems. A second Upper Ontology Summit may be scheduled as part of next year's NIST Interoperability Week events.

Source: National Institute of Standards and Technology