Software Advance Helps Computers Act Logically

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Computers just respond to commands, never "thinking" about the consequences. A new software language, however, promises to enable computers to reason much more precisely and thus better reflect subtleties intended by commands of human operators. Developed by National Institute of Standards and Technology (NIST) researchers and colleagues in France, Germany, Japan and the United Kingdom, the process specification language software, known as ISO 18629, should make computers much more useful in manufacturing.

ISO 18629 uses artificial intelligence (AI) and language analysis to represent computer commands in the context of a manufacturing plan. Researchers have incorporated approximately 300 concepts, such as “duration” and “sequence,” into its software structure. Computers using software with this expanded, though still primitive AI capacity, can act on a word’s “meaning,” interpreting a command almost like a person.

For instance, a person who hears the commands “paint it, before shipping it” and “turn on the coolant, before milling” understands that the word "before" has slightly different meanings in these two different contexts. In the first command, it is understood that painting and drying must be completed prior to the next action, shipping. In the second command, however, the first action, turning on the coolant, continues after the milling starts. ISO 18629 supports computer systems with this type of rudimentary understanding of context-specific language.

The ISO 18629 language is especially suited for the exchange of process

planning, validation, production scheduling and control information for guiding manufacturing processes. The International Organization for Standardization (ISO), which already has approved six sections of the fledging standard, is currently reviewing the last of its three sections. Once the expected ISO approval is given, software vendors will begin building a variety of manufacturing systems that conform to ISO 18629.

Source: NIST