

Computers With Human-Like Common Sense and Language Understanding



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CURRENT RESEARCH

Software module for representing, searching, and reasoning about everyday common-sense knowledge

Our computers and AI systems can now do many impressive things, but they still lack what we humans call "common sense" and the ability to understand the full meaning of text in English and other human languages. These tasks require the ability to represent complicated general knowledge in the machine – and a lot of it. We humans know about tables, chairs, cars, trucks, doors, locks, keys, stop signs, sharp knives, policemen, electric outlets. We not only know the properties of these things, but we know what they can do, what we can do with them, and what we shouldn't do. We assume that all other normal humans in our culture know these things too – if they don't, we say that they lack common sense.

Most of our current AI systems know very few of these things, if any. This leads to AI systems that behave like experts in certain narrow areas, but that can be hard to deal with and prone to foolish blunders that no human would ever make.

We can not only represent and regurgitate our stored knowledge – we can reason with it. If I tell you that "Clyde" is an elephant, you suddenly appear to know a lot about Clyde, without being told: He is gray, a mammal, and definitely not a plant. He has four legs, a liver, and a backbone. He can move around, must eat occasionally, and may be dangerous to nearby humans if he is untrained. He would not be a good pet for someone living in a small apartment.

Language understanding depends on this collection of background knowledge as well. As we humans listen to a seemingly simple sentence – "The tanks fired on the demonstrators" – we are constantly (usually without conscious mental effort) disambiguating the words (what kind of "tanks"?), filling in missing...

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AFFILIATION



Carnegie Mellon University

EDUCATION

- Ph.D. in Artificial Intelligence 1977, Massachusetts Institute of Technology
- M.S. and B.S. in Electrical Engineering and Computer Science 1973, Massachusetts Institute of Technology

AWARDS

- Outstanding Technology Contributions Award, 2013
- Elected Fellow, 2003

RESEARCH AREAS

Technology, Computational Sciences / Mathematics, Robotics, IOT, Devices, Data

FUNDING REQUEST

Your contributions will help support the ongoing research of Dr. Scott Fahlman on creating tutorial materials for Scone, a software component his team developed to incorporate human-like common sense into AI systems, making them less brittle and error-prone. A donation of any amount will help fund the \$500K/year required to increase project personnel and engage more undergraduate students. With your generosity, Dr. Fahlman will be able to accelerate progress and make his novel system available to all.

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