

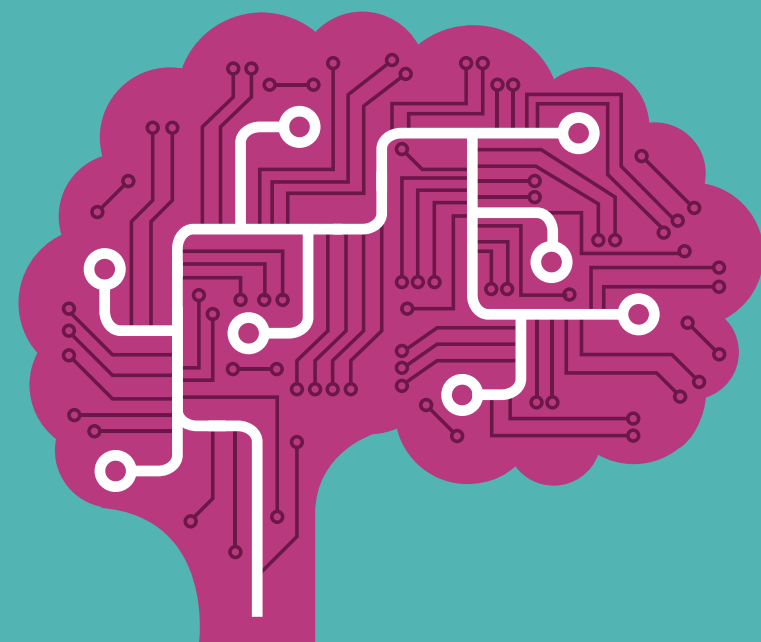
# 5 BIG IDEAS IN ARTIFICIAL INTELLIGENCE



## 1. PERCEPTION

### EXTRACTING MEANING FROM SENSORS

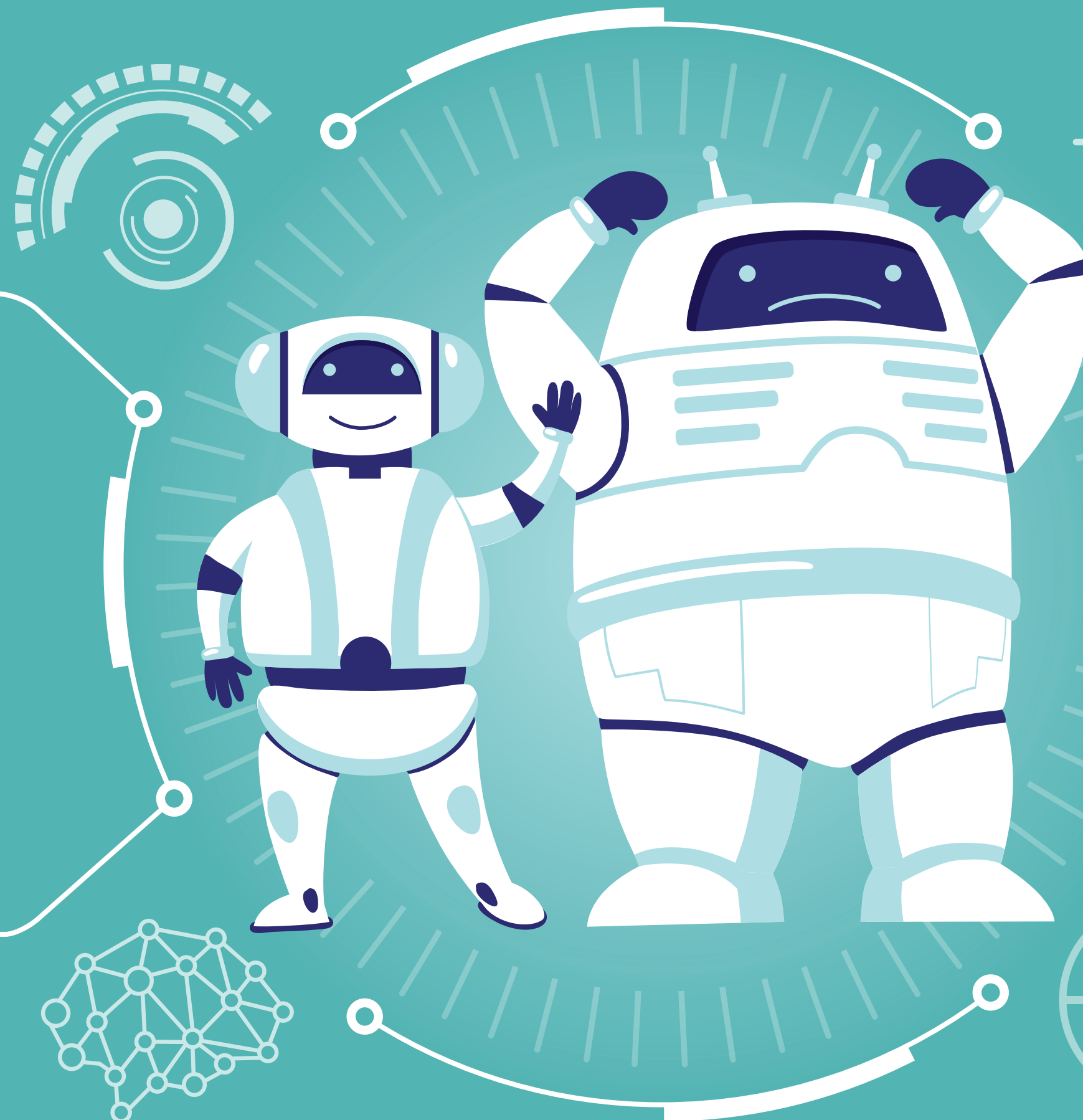
Computers perceive the world using sensors. Making computers “see” and “hear” well enough for practical use is one of the most significant achievements of AI to date.



## 3. LEARNING

### COMPUTERS LEARN FROM DATA

Machine learning is a kind of statistical inference that finds patterns in data. Many areas of AI have progressed significantly in recent years thanks to learning algorithms that create new representations. For the approach to succeed, tremendous amounts of data are required. This “training data” must usually be supplied by people, but is sometimes acquired by the machine itself.



## 4. NATURAL INTERACTION

### ABILITY TO INTERACT WITH HUMAN

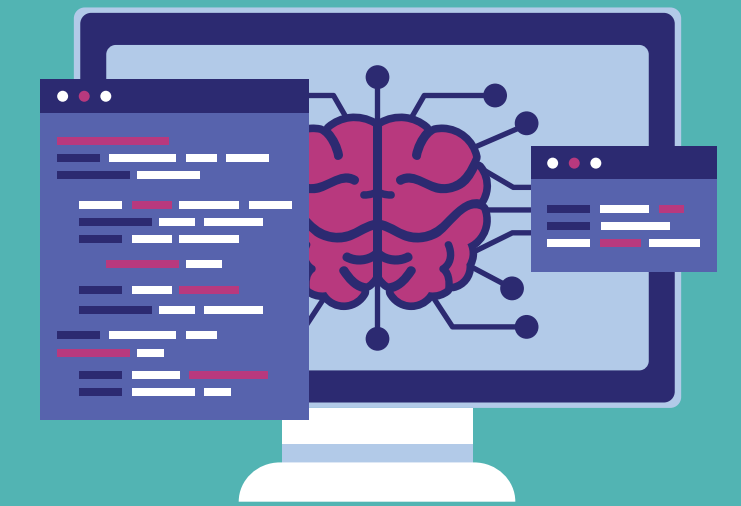
Agents must be able to converse in human languages, recognize facial expressions and emotions, and draw upon knowledge of culture and social conventions to infer intentions from observed behavior. Today’s AI systems can use language to a limited extent, but lack the general reasoning and conversational capabilities of even a child.



## 2. REPRESENTATION & REASONING

### A REPRESENTATION OF THE WORLD FOR REASONING

Representation is one of the fundamental problems of intelligence, both natural and artificial. Computers construct representations using data structures, and these representations support reasoning algorithms that derive new information from what is already known.



## 5. SOCIETAL IMPACT

### HOW AI IMPACT OUR SOCIETY

AI can impact society in both positive and negative ways. AI technologies are changing the ways we work, travel, communicate, and care for each other. But we must be mindful of the harms that can potentially occur. Thus, it is important to discuss the impacts that AI is having on our society and develop criteria for the ethical design and deployment of AI-based systems.

Designed by 10Botics

>10BOTICS  
LEARN FOR THE FUTURE

AI4K12  
.org

The AI for K-12 Initiative is a joint project of the Association for the Advancement of Artificial Intelligence (AAAI) and the Computer Science Teachers Association (CSTA), funded by National Science Foundation award DRL-1846073



This work is licensed under the Creative Commons.  
Attribution-NonCommercial-ShareAlike 4.0 International License.  
To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-sa/4.0>