

Hello. It looks like you're using an ad blocker that may prevent our website from working properly. To receive the best experience possible, please make sure any blockers are switched off and refresh the page.

If you have any questions or need help you can email us

a topic is hot when products use the terminology in their name or in their marketing materials. We've see this done with "ease of use", Cloud Computing, and Blockchain.

**Randy Johnston** • May. 22, 2018



From the May 2018 Issue.

One of the hot areas of emerging technology is Artificial Intelligence or AI. You know a topic is hot when products use the terminology in their name or in their marketing materials. We've see this done with "ease of use", Cloud Computing, and Blockchain. Artificial Intelligence is so hot of a topic among the development community that

the marketing teams are saying products have AI when in fact, they do not. Because

Hello. It looks like you're using an ad blocker that may prevent our website from working properly. To receive the best experience possible, please make sure any blockers are switched off and refresh the page.

If you have any questions or need help you can email us

### **On the positive side:**

- Machines mimic cognitive functions associated with human minds such as learning and problem solving.
- As AI becomes more capable, tasks that were considered AI are considered solved, for example, OCR.
- Today, AI developments include human speech, autonomous cars, interpreting complex data like images and video.
- Algorithms can learn from data and provide insight and actionable items with minimal human intervention.

### **On the down side:**

- For difficult problems, algorithms require enormous computation.
- “The development of full artificial intelligence could spell the end of the human race. Once humans develop artificial intelligence, it will take off on its own and redesign itself at an ever-increasing rate. Humans, who are limited by slow biological evolution, couldn't compete and would be superseded.” Stephen Hawking. Other critics include: Bill Gates, Elon Musk, and Peter Thiel.
- Devaluation of humanity.
- Decrease in demand for human labor.
- Artificial moral agents.
- Machine ethics.
- Malevolent and friendly AI.
- Machine consciousness.
- Robot rights.
- Superintelligence.

AI has been under development for a long time, starting at Dartmouth in 1956. I was

Hello. It looks like you're using an ad blocker that may prevent our website from working properly. To receive the best experience possible, please make sure any blockers are switched off and refresh the page.

If you have any questions or need help you can email us

AI is a broad collection of topics and approaches, which include computational psychology, computational philosophy, and computer science. Together the human-like behavior, mind and actions make up AI.

We've seen the results of AI with public relations stunts when:

- **Deep Blue** became the first computer chess-playing system to beat a reigning world chess champion, **Garry Kasparov** on May 11, 1997.
- In a February 2011 *Jeopardy!* quiz show exhibition match, IBM's question answering system, **Watson**, defeated the two greatest Jeopardy champions, **Brad Rutter** and **Ken Jennings**, by a significant margin.
- At the 2017 **Future of Go Summit**, **AlphaGo** won a **three-game match** with **Ke Jie**, who at the time continuously held the world No. 1 ranking for two years.

## Why?

AI is a broad collection of topics and approaches. Because there are so many topics to cover, there are broad fields of study that each have a lot of depth. However, purists are after the last bullet in the list below, General Intelligence. This is not around the corner, as computer scientists of the 1950's believed, but a decade or more into the future, even with the rapid progress being made today. There are a number of problems AI is trying to solve:

- Reasoning – AI has progressed using “sub-symbolic” problem solving **statistical approaches to AI** mimic the human ability to guess faster and more accurately.
- Knowledge representation – a representation of “what exists” is an **ontology**: the set of objects, relations, concepts, and properties formally described so that software agents can interpret them.
- Planning – intelligent agents must be able to set goals and achieve them, modifying inputs as needed.

- Learning – the study of computer algorithms that improve automatically through

Hello. It looks like you're using an ad blocker that may prevent our website from working properly. To receive the best experience possible, please make sure any blockers are switched off and refresh the page.

If you have any questions or need help you can email us

- **Emotional intelligence** – affective computing is the study and development of systems that can recognize, interpret, process, and simulate human **affects** (=emotions), needed for two reasons:
  - o being able to predict the actions of others, such as in self-driving vehicles.
  - o facilitate **human-computer interaction** by showing emotions.
- Creativity – theoretical and/or practical generation of novel and useful outputs including music and art.
- **General intelligence** – researchers think that their work will eventually be incorporated into a machine with **artificial general intelligence**, while a few believe that **anthropomorphic** features like **artificial consciousness** or an **artificial brain** may be required for such a project.

## So how do Artificial Intelligence approaches work? They use:

- Cybernetics and brain stimulation – connection to neurology .
- Traditional symbolic AI – **John Haugeland** named these approaches to AI “good old fashioned AI” or “**GOF AI**“ exploring the possibility that human intelligence could be reduced to symbol manipulation.
- Cognitive simulation – Economist **Herbert Simon** and **Allen Newell** studied human problem-solving skills from psychological experiments resulting in the Soar architecture in the 1980's.
- Logic-based – **John McCarthy** in his laboratory at **Stanford (SAIL)** used formal logic and led to the Prolog language and the science of logic programming.
- Anti-logic or scruffy – **Marvin Minsky** and **Seymour Papert** found that solving difficult problems in **vision** and **natural language processing** required ad-hoc solutions.

- Knowledge-based – led to the development in the 1970’s of [expert systems](#),

Hello. It looks like you’re using an ad blocker that may prevent our website from working properly. To receive the best experience possible, please make sure any blockers are switched off and refresh the page.

If you have any questions or need help you can email us

- [Systems, elementary computation and statistical tools.](#)
- Statistical methods – sophisticated mathematical tools to solve specific subproblems that are truly [scientific](#), in the sense that their results are both measurable and verifiable.
- Intelligent agent – a system that perceives its environment and takes actions which maximize its chances of success.

Read my [column next month](#) (June 2018) to find out “What AI Means for the Practice of Accounting and to Accounting Professionals.”

Accounting • Artificial Intelligence • Digital Currency • Technology

CPA Practice Advisor is registered with the National Association of State Boards of Accountancy (NASBA) as a sponsor of continuing professional education on the National Registry of CPE Sponsors.

© 2024 Firmworks, LLC. All rights reserved