

Artificial Intelligence

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The most important general purpose technology of our era is Artificial intelligence.

25 to 30 % of all large US companies are pursuing AI.

Machine learning is perhaps the most important component of AI, but it has multiple variations.

AI hasn't transformed business yet.

AI tends to be a narrow technology that supports particular tasks, not entire jobs or processes.

Highly ambitious moonshot projects such as treating cancer, enabling autonomous vehicles or powering drone deliveries have been unsuccessful or slow to arrive.

AI impact on employment is unclear, but jobs will clearly change.

For more than 250 years, the fundamental drivers of economic growth have been technological innovations.

Within just the last few years, machine learning has become far more effective and widely available.

The term artificial intelligence was coined by John McCarthy in 1955. He was a math's professor at Dartmouth.

In 1957, the economist Herbert Simon predicted that computers would beat humans in chess within ten years. It took 40 years !!

Speech recognition has improved three times as fast, and the error rate once at 8.5 % has dropped to 4.9 %

Image recognition has improved dramatically. An app running on your smart phone can recognize virtually any bird in the wild.

The error rate for recognizing image from a large data base called Imagenet fell from more than 30 % in 2010 to 4 % in 2016.

Machine learning systems are not only replacing older algorithms in many applications, but are now superior at many tasks that were once done best by human beings.

A computer's narrow understanding implies a broader understanding and that's the biggest source of confusion.

The most important thing to understand about ML is that it represents a fundamentally different approach to creating software.

Polanyi's paradox says that we all know more than we can tell.

Supervised learning systems

Input X	Output Y	Application
Voice recording	Transcript	Speech recognition
Photographs	Bot	Image tagging
Drug chemical properties	Treatment efficacy	Pharma R and D
Recipe ingredients	Consumer reviews	Food recommendations
Faces	names	Face recognition

There are 3 pieces of good news for organizations putting ML to use:

1. AI skills are spreading quickly

2. necessary algorithms and hardware for modern AI can be bought or rented as needed

3. you might not need so much data to use ML

Machine learning is driving changes at three levels – tasks and occupations, business processes and business models.

Machine learning systems have low ‘interpretability’ which means humans have difficulty figuring out how the systems reached their decisions.

Unlike humans , machines are not yet good storytellers.

Pablo Picasso said “ computers are useless, they can only give you answers”

One of the greatest legacies of machine learning will be the creation of a new generation of business leaders.

In an AI world , the most nimble and adaptable companies and executives will thrive.

Over the next decade, AI will not replace managers but managers who use AI will replace managers who do not use AI.

Lumos is computer vision AI, a tool that can comb through photos on FB or Instagram or other platforms and learn what they contain.

Systems developed by your vendors or consultants have little value to your business if they are generic.

They say data is the new oil

Just as with oil, the more the number of suppliers of your data, the less useful it is.

Artificial intelligence is set to transform every industry just as electricity did 100 years ago.

Setting up AI projects in your company

- **Appoint a leader**
- **Conduct business value and technical diligence**
- **Build a small team**
- **Communicate**

Collaboration between humans and machines

- **Reimagine business processes**
- **Embrace experimentation**
- **Actively direct AI strategy**
- **Responsibly collect data**
- **Redesign work to incorporate AI**

Humans need to perform 3 critical roles:

1. Train machines to perform certain tasks
2. Explain the outcomes of those tasks
3. Sustain the responsible use of machines

For many business processes, poor scalability is the primary obstacle to improvement

AI systems and devices will soon recognize, interpret, process and stimulate human emotions.

The biggest hurdle to finding the right balance might not be achieving more effective forms of emotional AI but finding emotionally intelligent humans to build them.

AI will make predictions cheaper, faster and more accurate.

As AI develops, it will rely less on bottom up data and more on top down reasoning that resembles the way humans approach problems and tasks.