

**SUMMARY**

- The phrase has existed since the 50's, but many think it is now a meaningful reality
- Machines taking over the world is a sci-fi fear that most experts dismiss as impossible
- Recognizing industries that can utilize Machine Learning may prove valuable to investors

**HISTORY & BACKGROUND**

In the early days of computers, Artificial Intelligence (AI) was thought of as a task that a computer performed that would have required human intelligence to carry out. Typical functions would be those that required problem solving, reasoning and planning. As computers have evolved, so have the level of tasks that computers (or other electronic equivalents) can perform. In today's world, we are guided by GPS maps, helped by Alexa and Siri, and many have their stock and bond trading strategy determined by a computer.

**INSIGHTS & PORTFOLIO IMPLICATIONS**

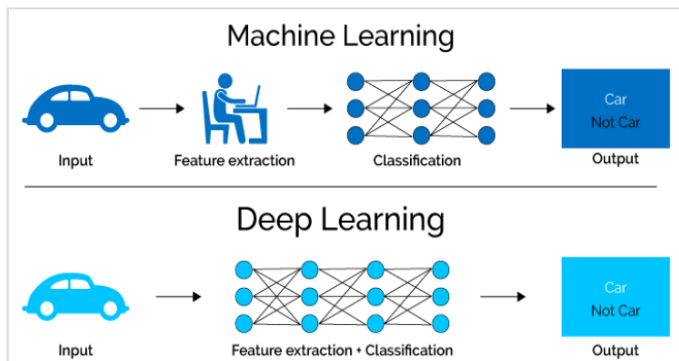
**Machine Learning**

As the name suggests, recent advances in computing power are turning former science fiction movie plots into reality. A computer system can be programmed to "learn" by analyzing data and then developing an approach to solve a given task. The difference between today's reality and the sci-fi world of *The Terminator* is that machines are not malevolent, but rather they approach problems looking to meet a given objective. Conflict can occur when objectives misalign.

**Deep Learning**

Building off of the design of the brain, **neural networks** are interconnected algorithms that perform very specific tasks. As the number of algorithms (nodes) increases, the more complex problems this collection of nodes can analyze. Furthermore, as we learn how to organize and optimize the structure and the data that is used, its power does seemingly become endless. Whereas the computer has always been the performer of tasks based on what humans envision, the emerging ability to learn from experience and adjust to new inputs makes it likely that computers will help us discover new applications unimaginable just a few years ago.

**Independently Figuring Out What Questions to Ask**



Source: artificialintelligencehow.com

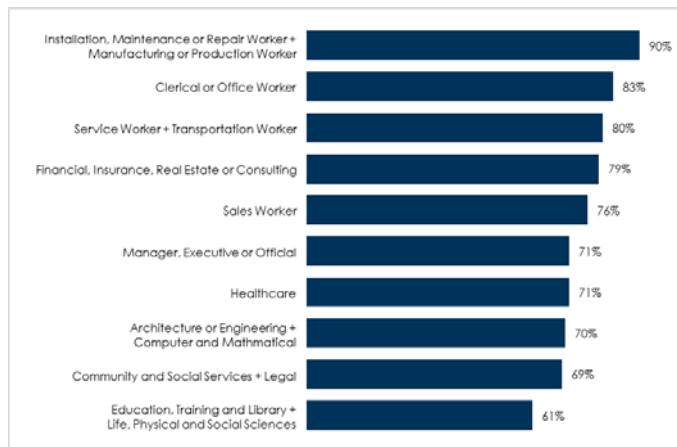
**Expanding the Reach**

Machine learning represents a significant tool to open new possibilities for AI. Previous algorithms for recommendations used by Amazon have now been replaced by AI. Machines are now reviewing commercial loan contracts for JPMorgan Chase. New uses of AI have reached the medical profession as well, with the automated review of patient scans now able to diagnose cancer. It would seem the sky is virtually the limit, as technology invades traditional activities.

**The Outlook**

The main limitation now is the number of skilled professionals in the area. The shortage of data scientists is being addressed by new curriculum, both online and in the classroom. In addition, there is a need for management visionaries, those who can foresee efficient uses of this rapidly expanding tool. Thinking about the overall number of jobs in the US, there is concern that AI may eliminate more jobs than it creates however, technological advancements often create efficiencies that allow humans to engage in more valuable endeavors.

**American Workers by Job Classification Who Believe AI Adoption Will Result in Net Job Loss**



Source: Gallup

**ACG'S POSITION**

AI is not a passing fad, and it is accelerating at a pace that takes quantum leaps every few years. Tasks that were once viewed as human-intensive will be turned over to automated processes. Industries and companies that recognize and evolve will become leaders. Wall Street's product creation machine has recently spawned several AI and robotics themed vehicles, and computerized trading programs now mine proprietary data to remove bias and capitalize on market inefficiency. While investor implications cannot be fully understood, experts agree we are far away from machines that exhibit the generalized knowledge required to disrupt the human element of advice.

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