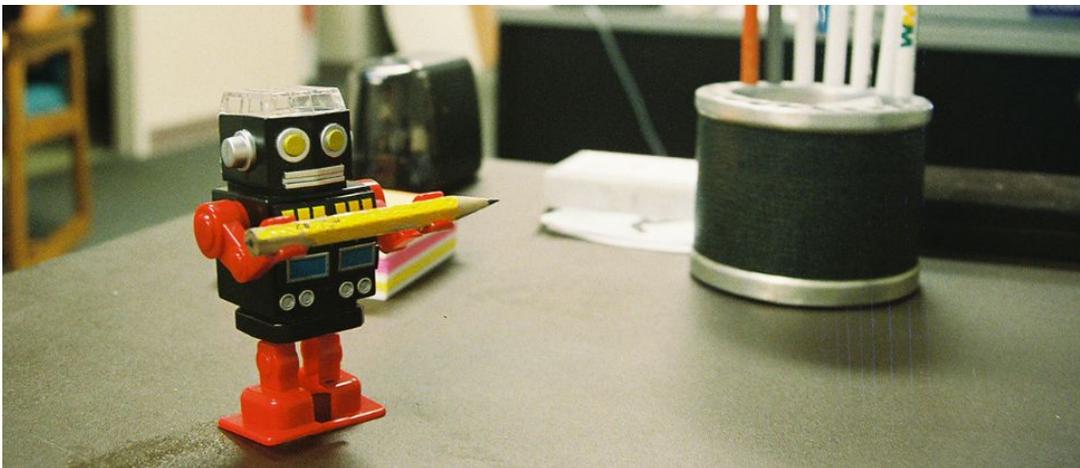


TECHNOLOGY

How Artificial Intelligence is Reshaping Management

by Amanda Wong



The burgeoning presence of artificial intelligence (AI) in our daily lives has generated both great anxiety and excitement for the future. This post discusses the current state of AI and how it is used in a management context.

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What is AI?

Artificial intelligence describes a wide portfolio of applications that all relate to the science and engineering of intelligent machines and computer programs (e.g. data analysis, machine perception, motion planning). At this particular moment in history, researchers

have made the greatest strides in the fields of natural-language processing and data analysis. The former refers to the ability to read and understand the languages that humans speak while the latter refers to the understanding of data, especially big data. The popular Apple program Siri, which functions personal assistant, is an example of both these fields in action. Siri understands and responds to human speech and answers questions directed to it by sorting through big data to find answers.

Development has been slower in other branches of AI, such as computational creativity and decision-making. The former refers to the development of “creative” works, while the latter refers to the ability to choose actions. These fields, among many others, are hampered by the limitations of programming. Computational creativity not only demands a tighter definition of what is “creative”, but also requires a sense of novelty. Thus, researchers have found it difficult to develop machinery that can go beyond programming to create its own novel idea – although many computer theorists argue that the capacity is on the horizon. The ability to make decisions falls into a similar trap, according to Joab Rosenberg. Although researchers can feed computers enough scenarios to predict outcomes, machine learning is limited to making inductive predictions based on past experience. Thus, the decisions they make on the futures they predict will always be a continuation of past behaviors and will not take unpredictable or novel actions into account.

What do people think about AI?

AI is currently at work in almost all sectors of modern life – in hospitals, workplaces, phones, and more. In the medical field, machine learning allows physicians to scan large sets of patient information to narrow down which patients are at highest risk for complications. It also allows robots to conduct detail-oriented surgery with greater precision and accuracy than a human surgeon. In the literal hands of the public, applications like Siri and Google Search use AI to instantaneously source the Internet for search results, traffic predictions, GPS maps, and entertainment. In the workplace, AI is used to scan big data sets to create statistics and predictions. Additionally, its natural-language processing holds a great capacity for translation and allows businesses to communicate in written and oral form regardless of language barriers. In all of these

sectors, the AI capability to adapt to individual needs makes individual operations smoother and faster by using machine learning to study and recreate functions most useful to human users.

That being said, overwhelming numbers have expressed concerns that AI will grow too powerful. Much of this anxiety has to do with two fears: that machines will replace humanity and/or that they will attack humanity. The former often refers to replacement in the work force and is fueled by grim statistics: a popular 2013 report from the University of Oxford projects that approximately half of U.S. jobs will be automated within 20 years (Frey) and a study by the Obama administration found that as many as 80% of U.S. jobs paying under \$20/hour will potentially be replaced by AI. However, movies such as *Ex Machina* and *Her*, where protagonists fall in love with AIs, suggests that there is an underlying social fear that relationships built with AIs will eventually replace human connections. The latter is epitomized by the eponymous Terminator, who is a cyborg programmed to destroy mankind. As machines take a larger role in human well-being, whether that be in a self-driving car or on the operating table, researchers from Google DeepMind and Oxford University have turned to the development of a “kill switch” intended to stop rogue AI from destructive action.

How is AI used in the management sector?

AI is becoming a popular managerial tool to make company operations more efficient. Sean Captain’s article “Can Using Artificial Intelligence Make Hiring Less Biased?” in the series *The Future of Work* describes how using machine learning to optimize hiring algorithms benefits managers. He describes testing two applications designed to vet candidates. The first, Fama, examines an applicant’s web presence (Facebook page, newspaper articles, Twitter, blogs) to see if it contains alarming or offensive qualities while the second, Interviewed, uses automated tests to assess candidate knowledge. Both programs use different standards to knock out candidates who don’t have the qualities or skill sets for the job. They also add a level of objectivity to the candidate vetting process.

AI's big data capabilities have also helped companies organize and translate customer data into predictive models of key trends. This has helped marketing and consumer departments everywhere tailor their efforts to their specific key demographics à la Spotify, which uses AI to curate a “Weekly Playlist” for individual subscribers based on music users have previously saved. This has also helped companies efficiently use their resources by using machines to predict future resource and capital costs. Amazon, for example, uses machine learning to train B2B algorithms to predict vendor costs for shipping, products they'll need to restock, and quantities to order.

These benefits aside, incorporating artificial intelligence into everyday company operations has caused some difficulties. Strategies for pursuing machine learning and other new technologies is not defined by precedent, thus making it more difficult for senior management to develop a clear-cut market strategy right off the bat. Rather, managers must work from the ground-up to make strategic decisions: a bottom-up process that relies heavily on communication with those who are working directly with machine learning.

Implications

Artificial intelligence is ubiquitous from the perspectives of consumers and managers alike. Our increased reliance on artificial intelligence to gather data and optimize the work day suggests that, going forward, companies will prioritize the cultivation of technological innovation and work in order to stay ahead of competitors. We can predict from this that workers who understand artificial intelligence and can utilize it to benefit the company will thus be more valued.



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