

AN ALERT FROM THE BDO TECHNOLOGY PRACTICE

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ARTIFICIAL INTELLIGENCE (AI) AND THE OPPORTUNITIES FOR TECH

By [Aftab Jamil](#) and [Hank Galligan](#)

Artificial intelligence (AI) is disrupting the world. What was once exclusively the subject of science fiction and the daydream of futurists has become an ingrained—and necessary—part of today's society.

Drones, running on AI software, sweep the skies to deliver consumer products in record times. Industrial robots line factory floors to complete routine tasks in a quarter of the time it would typically take humans. Advanced data analytics programs enable companies to analyze the past, diagnose the present and predict the future.

The AI market is ripe for harvest. MarketsandMarkets [predicts](#) the global market will be worth \$16.06 billion by 2022, growing at a combined annual growth rate (CAGR) of 62.9 percent from 2016 to 2022. Forrester similarly [predicts](#) investment in AI in all business lines will more than triple this year compared with AI investment in 2016.

Such a high growth rate is unsurprising when considering tech companies' voracious appetite to build AI capabilities, whether by development, acquisition or joint venture. According to CB Insights, the last five years, from 2012 to 2017,

have already [witnessed](#) the acquisition of 200-plus private companies using AI algorithms—with 30 acquisitions already taking place this year, as of Mar. 24. Google takes the lead as the most prolific acquirer, with 11 AI acquisitions as of late April, followed by Apple, Facebook, Intel and other industry titans.

The establishment of specific funds to fuel these investments, such as the recently launched Microsoft Ventures, has also taken flight. In addition, Google, Facebook, Amazon, IBM and Microsoft announced last September a [Partnership on AI](#) to "to study and formulate best practices on AI technologies, to advance the public's understanding of AI, and to serve as an open platform for discussion and engagement about AI and its influences on people and society."

AI applications demand new components, products and services and provide new business opportunities for tech companies. Some of the areas for growth and innovation include:

Hardware Development

International Data Corporation (IDC) [forecasts](#) global spending on robotics, including purchases of robotic systems, system hardware, software, robotics-related services, after-market robotics



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hardware, commercial purchase of drones and after-market drone hardware, to more than double by 2020, growing from \$91.5 billion in 2016 to more than \$188 billion in 2020. For tech companies involved in the manufacturing of robotics hardware—those specializing in developing sensors, cameras, microprocessors, batteries, 3D printing, etc.—this is a sizable market opportunity.

According to CB Insights, last year [witnessed](#) 174 deals for robotics startups globally, up by 18 percent from 147 in 2015. While the U.S. continues to lag behind other countries like China and Japan in robotics hardware manufacturing, the increase in robotics demand leaves the door open for startup and entrepreneurial success.

Software Development

In addition to hardware, AI presents a dual opportunity for software developers—for those who directly develop AI software and those who use AI to develop software. Regarding the former, IDC [estimates](#) that revenue for cognitive and AI systems

will grow from an estimated \$8 billion in 2016 to more than \$47 billion in 2020—unsurprising when considering how prolific AI software has already become across several industries. Deep learning software, for example, has helped fuel IBM's supercomputer, Watson, Microsoft's Windows Phone and Bing voice search and Facebook's textual analysis and facial recognition capabilities. Even GE has gotten into the software game with its [new AI business Predix](#).

AI also promises to be a game changer in how software is developed. A Forrester [survey](#) of 25 application development and delivery (AD&D) teams revealed that respondents believe AI technologies will enable software developers to build smarter software faster, improving the planning, development and testing processes. Using machine learning and deep learning, developers can build more intelligent applications that can self-learn from past mistakes to produce more accurate insights after each iteration—and they can deploy those applications faster.

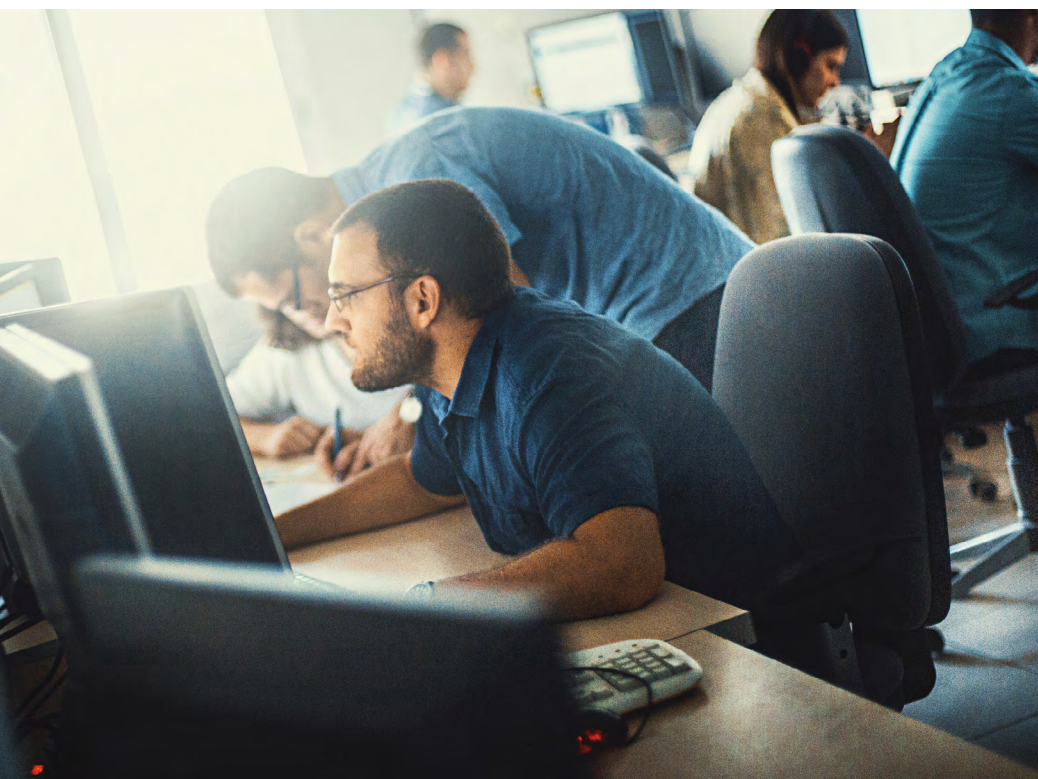
Big Data Solutions

For many companies today, the sheer volume of available data is staggering—an amount that can easily lead to action paralysis. Luckily, AI is predicated on Big Data—boosting the market opportunity for data analytics and solutions even further. One data solution that has taken off recently is the customer data platform (CDP), which helps organizations maximize AI's data analysis capabilities by consolidating disparate data from multiple sources for AI to access and use. Last year saw CDPs reap in \$300 million in revenue, with total revenue expected to exceed \$1 billion by 2019, according to a Customer Data Platform Institute [report](#). The market opportunity for CDP is so significant that Gartner called it an "innovation trigger" when adding it to the Hype Cycle for Digital Marketing and Advertising in 2016.

Nevertheless, CDPs are not the only ones to gain—other tech companies that provide data solutions, such as Oracle, IBM and HP, which build the hardware for data warehousing and analysis, also have reason to rejoice. IDC expects worldwide revenues for big data and business analytics (BDA) hardware, software and services to [reach](#) \$150.8 billion this year, with \$78.8 billion sourced from the U.S. alone.

Cybersecurity

AI is changing up the cybersecurity game—for both the good and the bad. Setting aside the doomsday scenarios surrounding the AI "singularity"—the moment in time when machines become smarter than their creators and wipe out the human race, a fear shared by Google's Ray Kurzweil, Tesla's Elon Musk, Bill Gates and Professor Steve Hawking—malicious use of AI to launch sophisticated, wider-scale cyberattacks is a current reality. On the flip side, AI-driven security solutions offer the best line of defense against cybercrimes, AI-enabled attacks included. Cybersecurity startups like Tanium, Lookout and Illumio are developing advanced AI algorithms, taking market share from established security giants and reflecting a broader



shift in investment from prevention to early detection and rapid response.

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The implications of—and applications for—AI are vast and span across many industries—from consumer business, manufacturing and healthcare to professional services, financial services, automotive and energy. As AI evolves and consumer and business use becomes more widespread, so will the need for technology-driven solutions that support AI devices.

Nonetheless, while AI introduces ample opportunities for tech, it poses a major threat as well: the replacement of jobs by automation. While robots have enabled goods and services to be produced at several times the speed of those produced by humans, they have already replaced—and are continuing to replace—millions of jobs in major industries, including manufacturing, trucking, consumer business and more. A report from Ball State University found that 88 percent of U.S. factory jobs between 2006 and 2013

were taken by robots and other domestic factors. The White House, in a December 2016 report, [estimated](#) that between 2.2 to 3.1 million trucking jobs in the U.S. today are threatened by self-driving vehicles. The Eurasia Group further [estimated](#) that 192 million retail jobs could be on the line, thanks to automation.

Thus, like all technologies, AI is a double-edged sword, with the power to create and replace new and current jobs, processes and paradigms. Tech companies and professionals who embrace AI stand to seize big opportunities in the year ahead. However, they must also remember that AI's effects reach far beyond tech to include more overarching social and economic societal repercussions.

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