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8 Ways Machine Learning Is Improving Companies' Work Processes

by Dan Wellers, Timo Elliott and Markus Noga

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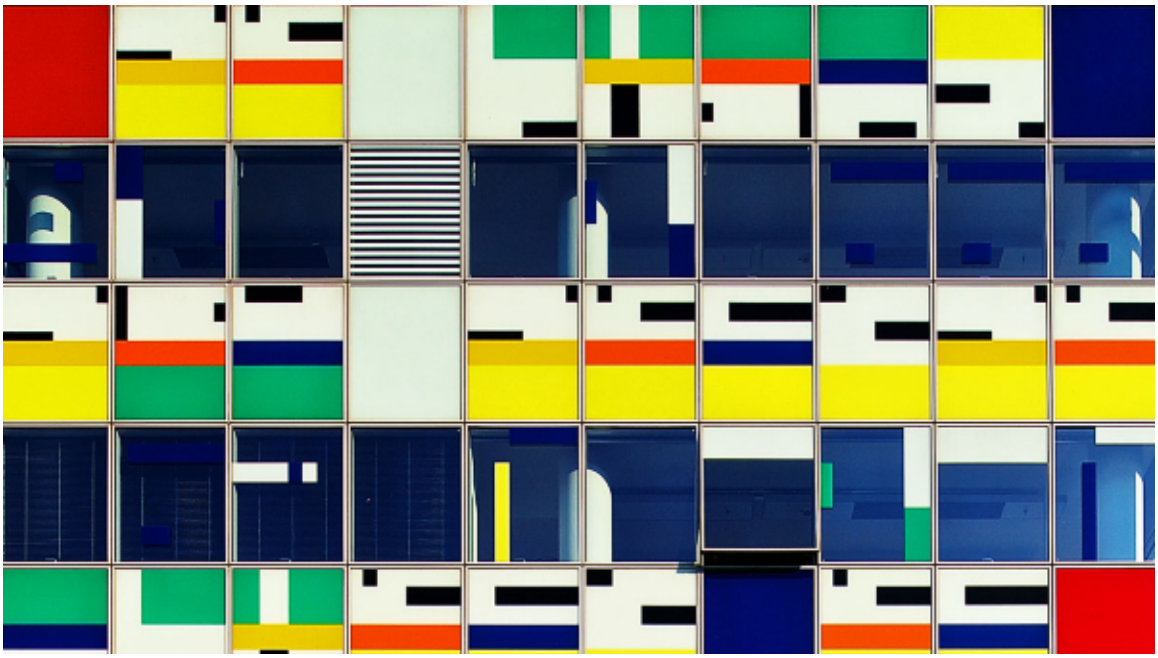

Today's leading organizations are using machine learning–based tools to automate decision processes, and they're starting to experiment with more-advanced uses of artificial intelligence (AI) for digital transformation. Corporate investment in artificial intelligence is predicted to triple in 2017, becoming a $100 billion market by 2025. Last year alone saw $5 billion in machine learning venture investment. In a recent survey, 30% of respondents predicted that AI will be the biggest disruptor to their industry in the next five years. This will no doubt have profound effects on the workplace.

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Machine learning is enabling companies to expand their top-line growth and optimize processes while improving employee engagement and increasing customer satisfaction. Here are some concrete examples of how AI and machine learning are creating value in companies today:

- **Personalizing customer service.** The potential to improve customer service while lowering costs makes this one of the most exciting areas of opportunity. By combining historical customer service data, natural language processing, and algorithms that continuously learn from interactions, customers can ask questions and get high-quality answers. In fact, 44% of U.S. consumers already prefer chatbots to humans for customer relations. Customer service representatives can step in to handle exceptions, with the algorithms looking over their shoulders to learn what to do next time around.
- **Improving customer loyalty and retention.** Companies can mine customer actions, transactions, and social sentiment data to identify customers who are at high risk of leaving. Combined with profitability data, this allows organizations to optimize "next best action" strategies and personalize the end-to-end customer experience. For example, young adults coming off of their parents' mobile phone plans often move to other carriers. Telcos can use machine learning to anticipate this behavior and make customized offers, based on the individual's usage patterns, before they defect to competitors.
- **Hiring the right people.** Corporate job openings pull in about 250 résumés apiece, and over half of surveyed recruiters say shortlisting qualified candidates is the most difficult part of their job. Software quickly sifts through thousands of job applications and shortlists candidates who have the credentials that are most likely to achieve success at the company. Care must be taken not to reinforce any human biases implicit in prior hiring. But software can also combat human bias by automatically flagging biased language in job descriptions, detecting highly qualified candidates who might have been overlooked because they didn't fit traditional expectations.
- **Automating finance.** AI can expedite "exception handling" in many financial processes. For example, when a payment is received without an order number, a person must sort out which order the payment corresponds to, and determine what to do with any excess or shortfall. By monitoring existing processes and learning to recognize different situations, AI significantly increases the number of invoices that can be matched automatically. This lets organizations reduce the amount of work outsourced to service centers and frees up finance staff to focus on strategic tasks.
- **Measuring brand exposure.** Automated programs can recognize products, people, logos, and more. For example, advanced image recognition can be used to track the position of brand logos that appear in video footage of a sporting event, such as a basketball game. Corporate sponsors get to see the return on investment of their sponsorship investment with detailed analyses, including the quantity, duration, and placement of corporate logos.

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- **Detecting fraud.** The typical organization loses 5% of revenues each year to fraud. By building models based on historical transactions, social network information, and other external sources of data, machine learning algorithms can use pattern recognition to spot anomalies, exceptions, and outliers. This helps detect and prevent fraudulent transactions in real time, even for previously unknown types of fraud. For example, banks can use historical transaction data to build algorithms that recognize fraudulent behavior. They can also discover suspicious patterns of payments and transfers between networks of individuals with overlapping corporate connections. This type of "algorithmic security" is applicable to a wide range of situations, such as cybersecurity and tax evasion.
- **Predictive maintenance.** Machine learning makes it possible to detect anomalies in the temperature of a train axle that indicate that it will freeze up in the next few hours. Instead of hundreds of passengers being stranded in the countryside, waiting for an expensive repair, the train can be diverted to maintenance before it fails, and passengers transferred to a different train.
- **Smoother supply chains.** Machine learning enables contextual analysis of logistics data to predict and mitigate supply chain risks. Algorithms can sift through public social data and news feeds in multiple languages to detect, for example, a fire in a remote factory that supplies vital ball bearings that are used in a car transmission.

Other areas where machine intelligence could soon be commonly used include:

- **Career planning.** Recommendations could help employees choose career paths that lead to high performance, satisfaction, and retention. If a person with an engineering degree wishes to run the division someday, what additional education and work experience should they obtain, and in what order?
- **Drone- and satellite-based asset management.** Drones equipped with cameras can perform regular external inspections of commercial structures, like bridges or airplanes, with the images automatically analyzed to detect any new cracks or changes to surfaces.
- **Retail shelf analysis.** A sports drink company could use machine intelligence, coupled with machine vision, to see whether its in-store displays are at the promised location, the shelves are properly stocked with products, and the product labels are facing outward.

Machine learning enables a company to reimagine end-to-end business processes with digital intelligence. The potential is enormous. That's why software vendors are investing heavily in adding AI to their existing applications and in creating net-new solutions.

But there are barriers to overcome. The most important is the availability of large quantities of high-quality data that can be used to train algorithms. In many organizations, the data isn't in one place or in a useable format, or it contains biases that will lead to bad decisions. To prepare your enterprise for the future, the first step is to assess your existing information systems and data flows to distinguish the areas that are ready for automation from those where more investment is needed. Consider appointing a chief data officer to ensure that data is being properly managed as a corporate asset.

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Another problem is prioritization; with so many opportunities, it can be hard to know where to start. To ease this burden, software providers are starting to offer predefined solutions enabled with state-of-the-art machine learning out of the box. Many organizations are also implementing AI centers of excellence to work closely with business departments. Wherever you start, it's important to link the projects to a long-term digital platform strategy to avoid having disconnected islands of innovation.

Lastly, don't underestimate the cultural barriers. Many employees worry about the consequences of all of this technology on their roles. For most, it will be an opportunity to reduce tedious tasks and do more, but it's vital that employees have incentives to ensure the success of new machine learning initiatives. You'll also have to think carefully about customers. AI can augment the power to get insights from customer data — perhaps beyond the point where customers are comfortable. Organizations must take privacy seriously, and relying on computers for important decisions requires careful governance. They should implement procedures to audit the real effects of any automated systems, and there should always be recourses and overrides as part of the processes. AI systems that use data about people should involve informed consent.

AI's continued rise is inevitable, and it's advancing into the workplace at a dizzying speed. The question now is not about whether managers should investigate adopting AI but about how fast they can do so. At the same time, organizations need to be thoughtful about how they apply AI to their organizations, with a full understanding of the advantages and disadvantages inherent in the technology.

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