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Get Ready for Artificial Intelligence

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Artificial intelligence (AI) likely already is in your world. You might be talking to Siri®, Alexa, or Cortana™ voice recognition software, or receiving recommendations on books and movies from Netflix and Amazon. You might be – perhaps unknowingly – interacting with chatbots or machine algorithms when ordering fast food or resolving your bill through a hospital billing process.

AI defined

Simply put, AI's goal is to make machines capable of performing some of the same intelligent tasks human beings perform. By making use of machine learning (ML), which falls under the umbrella of AI, AI systems can interpret data, learn from it, and use the learning to accomplish specific goals and tasks. AI performs tasks that typically require a human, such as speech recognition, translation, visual perception, and decision-making.

There are many types of AI. At one end of the technology spectrum is artificial general intelligence (AGI), which aims to build "thinking machines," or general-purpose systems with intelligence comparable to that of the human mind (and perhaps ultimately well beyond human general intelligence).[1] This is the type of AI that generally is portrayed in sci-fi movies.

However, this does not actually reflect the true state of AI today, as machines certainly do not yet "think" – and won't for a long time, if ever. There is no psychological phenomena present or any sort of awareness or understanding beyond the data machines are provided to learn and base decisions on. In artificial specific intelligence (ASI) – the other end of the AI spectrum – the machine is taught one very narrow task.

The tasks do not have to be complex in nature for ASI to work well. They can comprise simple rules that otherwise may be manually programmed (think "if this then that" type of rules) to aid intelligent decision-making. However, more complex systems require significantly more rules, which humans often can't comprehend or fully know. The data could be too broad, with too many variables on which the rules are based, or too deep, with too much data to learn from, or a combination of both.

This is where ML, which is a more efficient way to create AI systems, can be leveraged. It allows humans to define a problem, set up the data and parameters to facilitate the learning, and allow the machine to make "intelligent decisions."

Although the media hype is around AGI, ASI is the AI that has actually been applied and has proven to be tremendously useful. AI might include self-driving cars and robots, but it is a larger umbrella term that covers all of ML, which in turn contains specialties such as natural language processing (NLP).

- ML is a way to create AI more efficiently, based on data and how the system should respond to that data. It involves self-adaptive algorithms that a computer uses to identify patterns in data and then uses those patterns to make predictions.
- NLP is used to build systems that can interpret language. Its focus is the interactions between computers and human (natural) languages, in particular how to program computers to process and analyze large amounts of natural language data.

Other examples of ASI that involve building models to perform a specific task include:

- Classifying or segmenting customer types
- Detecting data anomalies
- Estimating the probability of early repayment

AI comes of age

AI isn't new; it has been developing since the late 1950s. What makes AI so topical today is that it is changing the way humans solve problems and perform work. Three advancements in computer technology are driving this growth:

1. The amount of computer capacity available and the processing speed both have increased. These enable larger and more complex machine learning models.
2. Advances in the development of deep neural networks have created machine learning algorithms that are more sophisticated.
3. Advances in data capture and analytics have made large amounts of data available to train the AI algorithms. With the help of AI, the data collected can move beyond explaining past customer behavior and actually predict future behaviors.

These changes in AI capabilities translate into applications that can reduce internal costs and increase quality and speed of service delivery.

Better, faster, or cheaper with AI

AI applications can replace or augment human labor, which can lead to reductions in internal costs or increases in the quality, consistency, and speed of service delivery.

- **AI gets the most out of data.** When self-learning ML algorithms are applied, the unique data set a company has acquired becomes a source of competitive advantage.
- **AI never gets tired.** Once humans have identified the learning objective and how to evaluate performance, AI can dive into reams of data and perform frequent, high-volume learning and discovery tasks repeatedly without getting tired.
- **AI makes existing products smarter.** AI will use data to interact with users in conversational platforms like customer service chatbots, regardless of time of day.
- **AI can continually learn from the data it receives.** AI can enhance user experience by recommending products based on the user's purchase or browsing history and can get better with time as it can be set up to learn how the user reacts to its recommendations.
- **AI achieves accuracy.** For example, AI might be better than trained staff at finding errors in large amounts of data.

Enterprises already are adopting AI

The implications of AI applications for humans are profound and run the gamut between doom for U.S. workers and more balanced optimism.

- Oxford University researchers claim that 47% of U.S. workers have a high probability of seeing their jobs automated over the next 20 years.[2]
- Gartner Predicts 70% of organizations will integrate AI to assist employees' productivity by 2021.[3]

The overwhelming fear is that AI robots will take jobs from people, and while they might take some, not all work done by people will be eliminated. Just like with any major revolution the word has seen – Stone Age, Industrial Revolution, information age – some jobs will be lost but a lot of them will simply evolve to augment AI and many more will be created to build, apply, and govern AI.

Overall economic output, productivity, and quality of life will increase. AI will change the way people work as well as the way they interact with colleagues, customers, and suppliers in a business ecosystem. It's likely to be at least as disruptive as the advent of the internet, but could be as monumental as the discovery of electricity. Businesses can adapt, especially those that already are thinking through how to use AI in their organizations.

AI's impact already is being felt, particularly in industries like financial services and telecommunications, which are at the forefront of adoption.

- Bank of America has begun testing a chatbot to improve customer service in 10 U.S. states. Named "Erica," the chatbot uses NLP to understand speech, text, and intent, and uses machine learning to gain insights from customer data that can be turned into advice and recommendations.[4]
- Telecom companies can predict failure based on patterns and can proactively fix all sorts of communications hardware, from cell towers to set-top boxes.[5]

There are significant developments underway at Crowe as well.

- The Crowe Exceptions Resolution solution for healthcare uses machine learning and proprietary data to help hospitals fix accounting exceptions such as credits and overpayments, bad debt, and payment denials. Machine learning has allowed Crowe to automate 80% of these types of accounting issues.
- The Crowe Intelligent Document Analyzer uses NLP to extract, summarize, interpret, and make conclusions based on the content it reads (much like Siri, Alexa, or other speech-to-text solutions do when you ask them questions and they return results).
- Crowe Data Anomaly Detection uncovers anomalous transactions without the need for any explicit rules, to help human analysts quickly identify possible fraud and material errors, rectify financial reporting misstatements, and improve the accuracy of financial statements.

Start thinking about AI

AI helps businesses collect data from disparate sources and – with the application of ML – can use self-learning analysis to an unprecedented degree. It's a revolution – one that enterprises of all sizes will want to prepare for. To begin the discussion about deploying AI in your organization, consider some of the most common data-collection use cases in areas such as sales, marketing, human resources, customer service, and the supply chain.

Deepen customer understanding. AI helps companies to learn more about their customers' preferences and habits (for example, segmenting customer types and allowing for hyper-customized user experiences) and perhaps find new niche markets.

Enhance customer service. Widely available today, chatbot technology can assist customers whenever they need help and can immediately answer questions from potential customers.

Optimize hiring and employee retention practices. Human resource departments have been using keyword scanning in resumes to sift through hundreds of job applicants. AI can help take that a step further. It can be used to compare an applicant's profile to that of the rest of the team to help gauge fit and identify skills that the applicant might have that complement the overall skills of the team. AI also can help determine which employees are likely to churn.

Take on routine back-office tasks. AI automates tasks like bookkeeping or scheduling, which frees up employee time for more value-added activities.

Considerations for adopting AI

Adopting AI will bring with it cultural, technological, and organizational challenges. Leaders will need to manage employee fears as the organization shifts from humans supported by IT to humans interacting with AI. Other challenges are more logistical, such as determining whether the data set is clean or if the insights gleaned from the data have value.

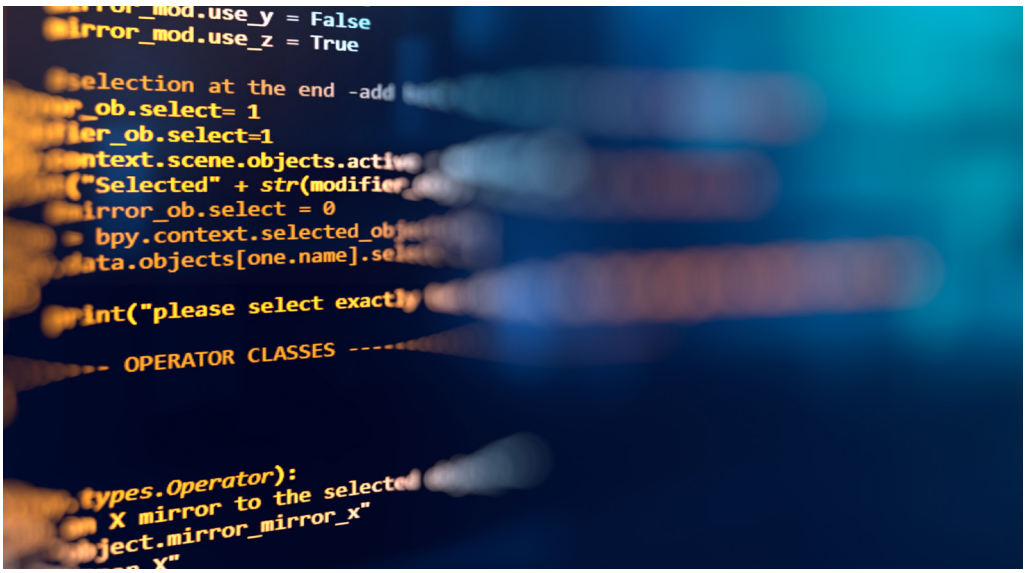
Even with AI, the adage garbage in, garbage out still applies. This is especially true of "point and click" AI systems that quickly are springing up with the promise that they can learn from any data thrown at them. While the ability to learn might be true, it is important to understand that there often are underlying errors and biases included in the data that the ML algorithm should not learn. Recognizing these issues and making sure the ML algorithms are learning from the right data, and not all of it, is a large component of data science.

Many of the organizational challenges might be familiar – developing a business use case, securing stakeholder buy-in, and obtaining the budget for a pilot. However, the greatest hurdle to adoption might be finding or training the right talent in a demand-driven market for AI specialists and data scientists.

Conclusion

AI is here. Even with the hype that surrounds all new technologies, AI already is beginning to deliver on its promise to provide new insights for businesses in the financial services, telecom, retail, and healthcare industries.

Organizations developing their AI strategy should look to their current data sets and determine what new value could be created. They should also reflect on their data strategy, and adjust it to create a healthy source of centralized data, in addition to capturing disparate data sources to maximize the value of an ML algorithm based on that data. They should then pilot accordingly, bearing in mind the significant cultural, organizational, and technological challenges that are ahead.



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