



A Guide to **Artificial Intelligence** For Executives

According to a recent survey conducted by IDG, companies spanning all industries are transforming their business processes through technological innovation. Specifically, enterprises are embracing public cloud computing as a means of processing vast amounts of data, optimizing performance, and improving their bottom line.



The survey respondents said that the benefits of cloud technology are as tangible as they are far-reaching. For example, migrating to the cloud often enables access to data analytics solutions. Cognitive computing technologies (think: artificial intelligence) have become widely popular in recent years due to their ability to provide businesses with real-time, actionable insights.

These types of tools allow business leaders to make data-driven decisions based on information and performance statistics that would have previously gone undiscovered. Simply put, data is being used in new and innovative ways, thus improving business value.

Intelligent Decision-Making, One Step at a Time

While it's certainly true that analytics in general elevates the raw value of data for any organization, the use of these technologies is much more elaborate than most people realize. Data analytics can help organizations across a wide variety of situations:

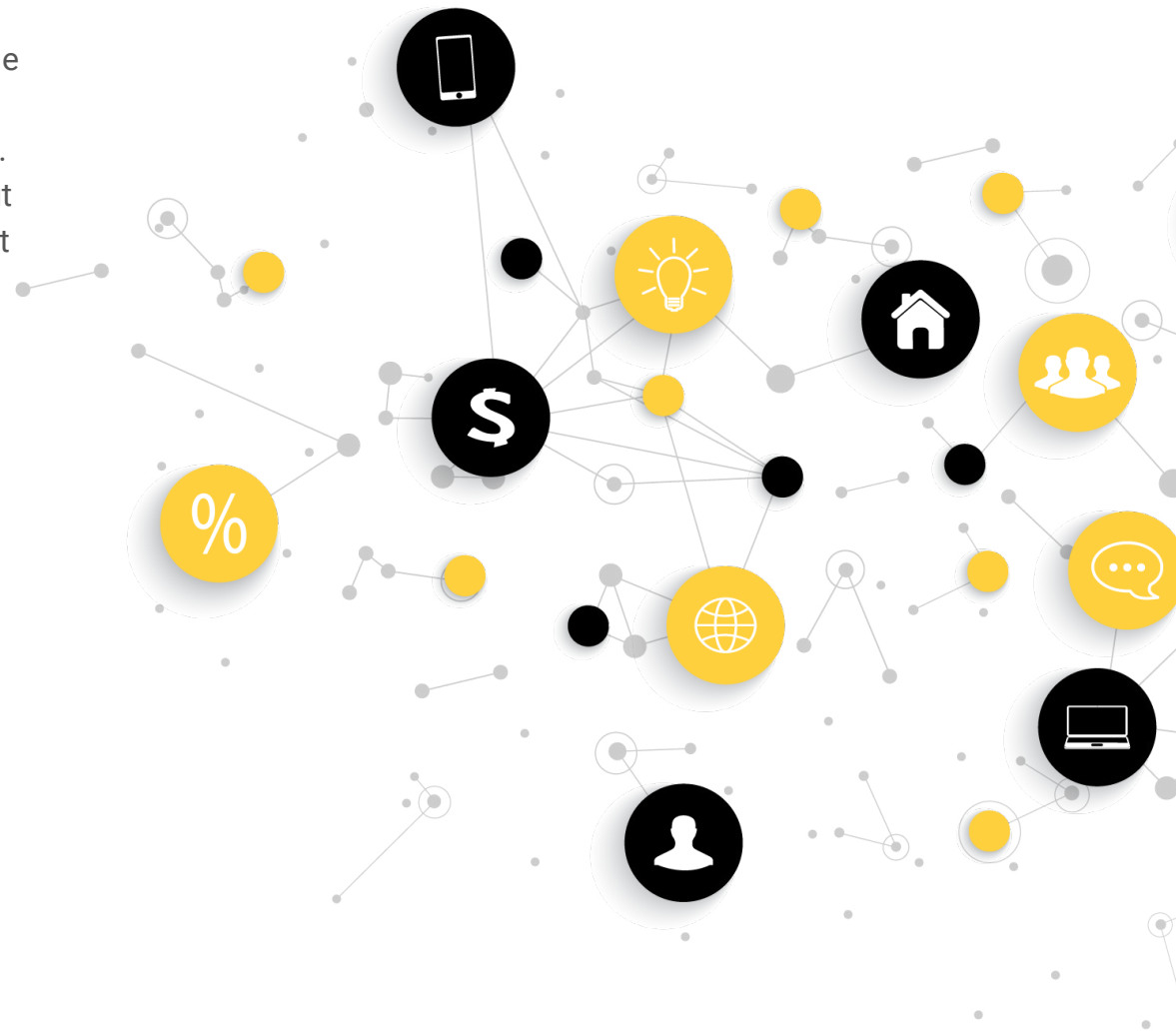
- Identifying new opportunities in preventative medicine by studying the complicated molecular structure of drugs.
- Gaining insight into customer behaviors and preferences, thus putting businesses in a better position to take advantage of them.
- Getting a better understanding of the customer decision-making process, which is invaluable when it comes to evaluating current and future services.
- Solving complicated manufacturing issues in a supply chain.
- Predicting future trends so that a business can capitalize on them BEFORE any of their competitors do.



These are the types of insights that would be extremely difficult or time-consuming to come by without complex data analytics models.

Think about it like this: time is by far one of the most valuable assets for any organization. As a result, companies are switching to AI in an effort to save as much of it as possible. Yes, you gain access to benefits like predictive analytics - but if you can also get there faster than anyone else, you cement your competitive advantage for years to come.

AI-powered automation of business processes has given many organizations the opportunity to adjust quickly and efficiently to customer preferences. Extracting value from big data by way of NLP (Natural Language Processing) algorithms helps save a tremendous amount of time while also eliminating risks and improving accuracy.



The Cloud: The True Enabler of Innovation

According to the IDG survey, more than half of respondents said that public cloud services helped them ease into the adoption of advanced data analytics technologies. 39% agreed that the cloud was one of the major stepping stones that allowed them to then explore artificial intelligence.

All told, investing in the cloud not only puts organizations in a better position to utilize their data, but also monetize it - creating something of a perfect storm.



The Talent Gap

However, embracing things like data analytics and artificial intelligence by way of the cloud isn't something you can just "do." These are things that require very precise skill sets and, unfortunately, not every organization is going to have immediate access to them.

Data analytics is the second most in-demand skill set for cloud deployments. But the demand for people with these skills is quickly outpacing the availability of viable candidates to fill them - meaning that hiring a quality data scientist for your team is often easier said than done. But if your organization can't meet this need, it means you are either losing out on or not utilizing the full potential of your data.

What, then, is a forward-thinking organization supposed to do?



Closing the Talent Gap

Generally speaking, there are two main approaches that most organizations resort to as they attempt to solve these talent and skill shortages.

The first often involves a restructuring of the organization itself, which normally begins with appointing a Chief Data Officer. This person will be in charge of crafting a true data strategy, along with a monetization baseline.

This approach also demands identifying both data providers and data consumers within the organization, and educating them as much as possible on topics like data quality and all the related service level agreements (SLAs). A dedicated operations team is also necessary for creating a data catalog.

Because not every business is going to have the capability to go through this type of major strategic change, the second approach involves choosing an experienced partner that allows that organization to innovate WITHOUT putting any additional burden on its in-house team.



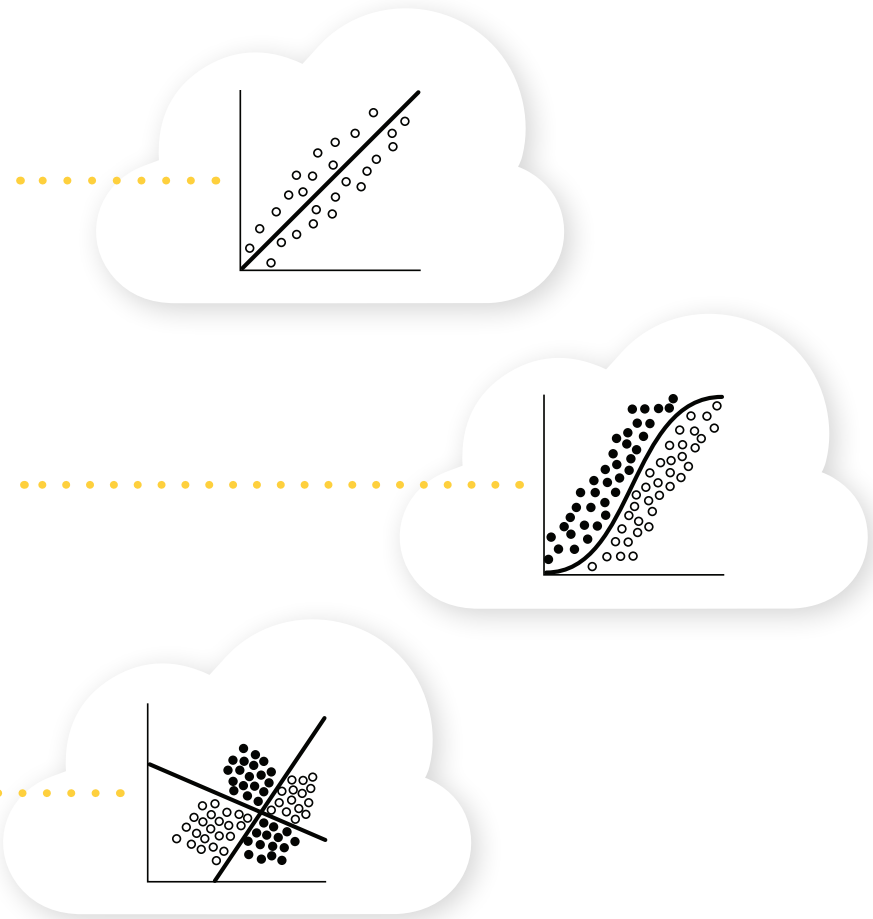
The Business Cases for Artificial Intelligence

Having said all of this, there are a number of distinct ways that you can actually apply artificial intelligence to your organization depending on what your long-term goals actually are. These include but are certainly not limited to the following algorithms:

LINEAR REGRESSION, which is a standard method for modeling a past relationship between dependent output variables and independent input variables. In other words, you're taking the data of the past and using it to predict the future. This can be a great way to adjust to product-level pricing in deep detail, for example, or to understand the actual impact of sales drivers such as competitor pricing.

LOGISTIC REGRESSION, which is identical to Linear Regression except the output variable in this case is binary - it's either true or false, nothing more. This would be ideal for creating a category for banking customers based on how likely they would be to default on a loan or for predicting potential health outcomes for patients based on current known conditions.

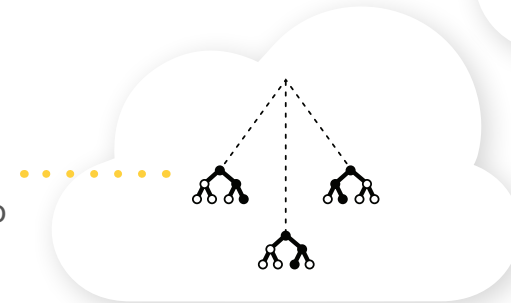
NEAR/QUADRATIC DISCRIMINANT ANALYSIS, which is a process that takes Logistic Regression one step further by positioning it in a way that handles non-linear problems. With this method, you could predict how likely a lead is to convert to an actual client based on past interactions, or even predict how likely you are to lose a current client based on their existing user experience.



DECISION TREES, which is a classification model that represents data values as branches (hence the name). This would be a perfect opportunity to understand the purchasing behavior of the customers on your website, for example, or even to assist with HR recruitment and screening decision frameworks.



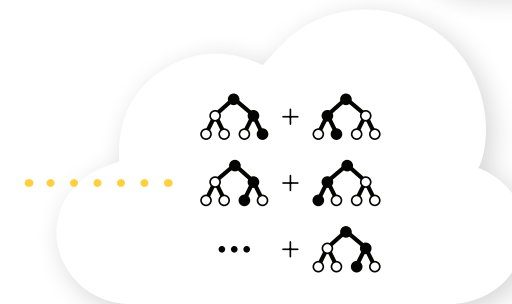
RANDOM FOREST, which improves the efficiency of a decision tree by creating as many predictions as possible. This would allow you to anticipate the load on an electrical grid based on given conditions, or to aid in recruiting decisions for key personnel members.



SUPPORT VECTOR MACHINES, which are utilized mostly for classification. Many businesses use this technique to try to anticipate how likely someone is to click on an ad, or to predict the number of customers a business needs to serve to remain functional over a given time period.



GRADIENT-BOOSTING TREES, which is a sequential generation of decision trees, where each one of the trees corrects the one that came before it. You could use this technique to try to anticipate product demand, thus allowing you to make better decisions involving inventory capacity. You could even predict the pricing of specific products based on various specifications.



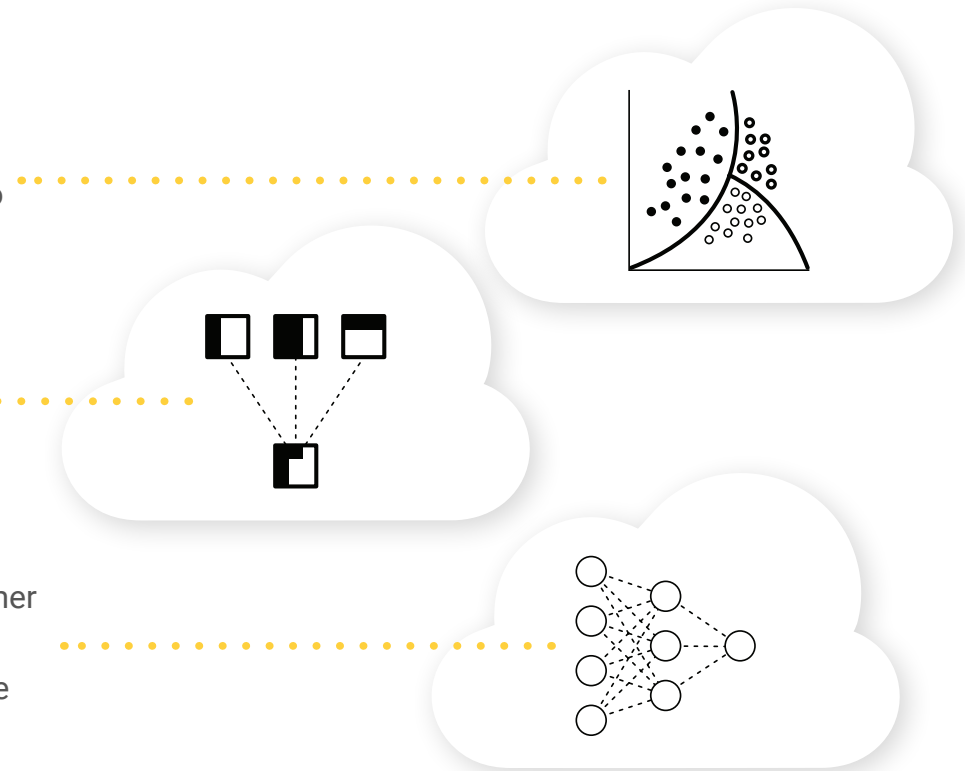
NAIVE BAYES, which is a way to apply the Bayes theorem in order to calculate the probability of any given event. This is literally how the SPAM filter in your email works, for example. But you can also use it to conduct a sentiment analysis based on customer reviews.

ADABOOST, which is a classification technique that generates a decision based on many models, all of which are weighted to ensure accuracy. This is commonly employed in banking fraud detection solutions.

SIMPLE NEURAL NETWORK MULTI-LAYERS MODELS, which are often used to predict whether an attempt to up-sell a particular customer will actually work. You could also use this to predict the willingness of a person to sign up for one of the products that you offer that are more premium in nature.

AND MANY, MANY OTHERS.

In the end, it's important to understand that artificial intelligence is



malleable - meaning that it can essentially be whatever you need it to be. Because of this, you cannot buy into the technology and hope that it somehow helps you accomplish your goals. Instead, you need to start by identifying your top short and long-term goals and work your way back to the solution that allows you to meet them.

Only by understanding what you need artificial intelligence to do will you be able to make that vision a reality. If you buy into the technology simply because you think “that’s what you’re supposed to do,” all you’re doing is investing a significant amount of money in infrastructure that you won’t be able to take full advantage of.