

# TQ Artificial Intelligence (AI)

by Accenture

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# Artificial Intelligence: A Preview

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## Artificial Intelligence: A Preview

Before you launch into the training on AI, let me provide some context for why this area is so important for Accenture and for our clients. The reason is that AI creates new pathways to drive growth, and oftentimes it can drive that business growth exponentially. Let me repeat that. AI creates new opportunities to drive growth, potentially exponentially. Notice that I didn't say cost savings. And AI can deliver cost and efficiency savings, but the real opportunity for industries and for our clients is to reimagine and drive that growth. AI not only can deliver business growth exponentially, but its foundational to the evolution of the companies as we travel into the era of intelligence. It'll have an impact on every aspect of a company, people, processes, systems, and applications, leading to new ways of customer engagement, new business models, improving human productivity to the next level, and enhancing human interaction within and outside the company. That's about everything. And this captures the heart of our belief and why we call our practice around these technologies applied intelligence. Applied intelligence, a term that Accenture coined, encapsulates more than just artificial intelligence. It's about data, automation, capturing the business process, the experience of the design, and tailoring it all for specific industries and clients to drive outcomes. Applied intelligence is this sum of that whole package of capabilities all wrapped together. It gives our clients a roadmap to start with automation, building in the intelligence and the analytics for insight, and then layer on the artificial intelligence, again, driving the business outcomes, and that's what we mean by applied intelligence. Accenture helps our clients with all of this.

AI brings value to businesses in a few ways. Better experiences, like when I finish watching a movie on Netflix, they recommend other movies or shows I may be interested in. And by the way, more than 75% of users select movies based on these recommendations. More accuracy, machine learning and deep learning can extract meaning from complex datasets much faster than humans could ever do. For example, when I'm trying to get home in New York rush hour traffic, Google Maps can quickly help me figure out the best route. Working smarter, redirecting human talent to more rewarding work like Google Translate. If you're listening to me right now in a language other than English, guess what? Google Translate is the AI tool we used. This is much faster than asking someone to translate all this. Now people can focus on more valuable and rewarding work, such as generating new business ideas. And then new products and services. Self-driving cars, anyone? With AI, a company can reimagine the way it does these things and do them in a way that humans could never do alone, which brings us to our Human + Machine perspective. It's not about the person, the human, or the machine, or versus the machine, it's about how the two come together and create this new opportunity, which you'll hear more about as we go through this session. In short, AI will permanently change how we work and live, and that's why we're talking about it with you and why it's our second topic in the TQ learning series. However, there's one thing we haven't talked about yet that's really important, and that's data. Data plays a fundamental role in AI, and in fact, AI could not exist at all if we had no data. Having not just data, but the right data, in place is the entire reason why AI functions at all. AI is only as good as the data it's based upon. Throughout the rest of this course, we'll dive deeper into this ying and yang relationship with AI and data. We'll also touch on other important topics such as responsible AI, the types of AIs that exist, how AI combines with other technologies to bring powerful solutions and innovations to our world, and, of course, Accenture's role with plenty of client stories. In Simon Allardice's segment, he'll dive deeper into dispelling certain myths about AI and explain key terms necessary to understand AI. You've heard of machine learning, deep learning, natural language processing, and more? Simon will explain all this. He'll also touch on the very crucial topic about using AI responsibly. As you go through the rest of this course, I want you to think about ways you can apply what you're learning to your daily work. What conversation should you be having with your team, your leads, your clients? What ways can AI help you think of new innovative ways of working or new business ideas? What can you learn from the client stories? So let's get started. Now, over to Simon Allardice to explain the fundamentals of artificial intelligence.

# AI: Executive Briefing

## Introduction

This is a short course about artificial intelligence, or AI, and we begin with a problem. The problem with AI is that everybody knows something about this already. The idea of artificial intelligence is part of our culture. It's in our movies, our TV, our books, our games. Even in the earliest days of feature films, we had Metropolis nearly 100 years ago, 2001: A Space Odyssey over 50 years ago, or Blade Runner, WarGames, The Terminator, The Matrix, I,

Robot, Ex Machina. You've been hearing about intelligent computers for decades, probably all your life, and, spoiler alert, where AI always end up wanting to kill everybody. Now, it's easy to think yeah, yeah, yeah, but that's fiction, I realize that. But, you know, when we hear and see similar cliches again and again and again, we should recognize we have probably all unconsciously picked up some beliefs and assumptions about artificial intelligence. I don't mean that we've all agreed on the inevitable dystopian nightmare future, but more generally just that we've absorbed some ideas and assumptions about what artificial intelligence means. What do we think AI is capable of? What do we think it's not capable of. And most people also have a few assumptions about how complicated this is or how much of a computer nerd they have to be to even understand it. But here's the thing. If you've been, let's just say just aware of artificial intelligence for a while, you might also have a sense you've been hearing a lot more about it recently, and not just in fiction, but seeing artificial intelligence mentioned in more business publications or seeing more conferences about it, more websites that mention it, more products that tout AI as a feature. And yes, it has become much more important recently. We've seen an explosion of applied, pragmatic, real-world applications. Artificial intelligence is being used in healthcare, being used in transportation, being used in finance, in marketing, in education, in customer support. It is everywhere. And over the next few minutes I'm going to take you on a tour of the most important ideas about artificial intelligence, different ways it can be implemented, and we'll go over a lot of the vocabulary. We'll explore ideas like machine learning, deep learning, neural networks, natural language processing, we'll talk about deepfakes and chatbots, and more, and we'll focus on real-world applications, how AI is actually being used and implemented right now. I'll cover a lot of the basic fundamental questions people often have when they get started here. Even things as simple as, so what's the difference between artificial intelligence and just a very complex computer program? Is there a difference? And if AI has been around for decades, and it has, why has it recently become such a big deal? What happened? But we'll begin with probably the most common question, what exactly is artificial intelligence? What does that even mean? Is there a simple, straightforward definition we could learn and internalize, and from that point on always be able to say okay, that is artificial intelligence, and that is not. Another spoiler alert. The answer is no. There is no single agreed upon definition that will always let us make that distinction; however, the question, what is artificial intelligence, is still an excellent question and a great place to begin. I'm Simon Allardice. Welcome to the Executive Briefing on AI.

## Defining Artificial Intelligence

One of the reasons I enjoy talking about AI is it's simultaneously the most innovative, current, up-to-the-minute, and groundbreaking technology you can imagine, which also has a very long and substantial history. This is older than anything else I teach. I have a few textbooks here on artificial intelligence. This one is 30 years old. This one is 40 years old. This one is 55 years old. I can't exactly go out and find a 55-year-old book about web development or blockchain or iOS, but artificial intelligence has been a serious field of study since the mid-1950s, and from those very earliest days, they never shined away from admitting this phrase, artificial intelligence, is not simple to define and nail down. And not because it's difficult. We understand what these two

words mean, but because, and here I'm going to use a very unusual, for me, sport analogy, with AI, the goalposts keep moving. This is a paper on artificial intelligence from 1958 written by Marvin Minsky, one of the major initial researchers in the field. He co-founded the AI Lab at MIT. I'll read two sentences. It would not be useful to lay down any absolute definition of intelligence or intelligent behavior, for our goals in trying to design thinking machines are constantly changing in relation to our ever-increasing resources in this area. As a little perspective, when he wrote these words, there would still be another 40 years to go before Google would even exist. But through the entire history of AI, the entire history of computing, we've always had these goals, these aspirations that we've described as requiring some kind of intelligence, like can a computer ever play chess at a grand master level, or will a computer ever recognize faces? Or, could a computer ever understand spoken commands? And as soon as we've ever figured out how to do that thing, the general response becomes okay, but that's not really intelligence, is it? The computer isn't actually thinking, it's just executing a formula, it's just a computation. There's even a name for this. We call this the AI effect. That with many technologies we now use every day, they begin as some kind of artificial intelligence research, but as soon as any part of it became implemented, practical, and widespread, nobody will call it AI anymore. There are tasks you could do on your phone that a few years ago would have been considered remarkable, incredible implementations of artificial intelligence. As just one small example, we have facial recognition that's so fast I could turn myself into a 3D cartoon in real time. If I presented this at an artificial intelligence conference 10 years ago, I would have been the star of the show. Now, we don't even use the term AI to describe it. It's just something we can do on a phone, if we even care. So, we're not going to worry about having the perfect, unchangeable definition of AI. But sure, we need some kind of definition, even if just to broadly categorize what are the kinds of things we typically consider artificial intelligence versus regular conventional computer programming. And I'm going to say that instead of going from the top down, you know where first we must precisely define what is artificial intelligence, and only then can we start talking about examples, it's actually better to build our understanding of AI from the bottom up. Let's explore some examples. Let's explore the approaches people have used to get a computer to have some kind of behavior we might call intelligent, and that's how we'll get to a worthwhile understanding of this. Though it is worth pointing out, there are people working in this field who really don't like the phrase artificial intelligence at all.

## Booms & Busts of AI

If you've been in the business world for a long time, let's say several decades, or you work with other people who have, there is a perception about AI you may need to deal with, which is, didn't we already try this back in the 1980s and figure out it was a total waste of time? And yes, there have been previous waves of AI, periods of massive enthusiasm about it, followed by years of deep skepticism. I started programming in the mid-1980s and there were a lot of AI vendors springing up at that time, often selling what were called expert systems. They were combinations of software and even dedicated hardware. There were systems like XCON and Intellect, we had languages like OPS5, or companies that specialized in this. We had Symbolics and IntelliCorp, and even an

artificial intelligence corporation. Now, if you're thinking, I've never heard of any of those, yeah, I know, because to cut a very long story short, while that period was a wonderful time for most of the computing industry who just kept on growing from strength to strength, the entire AI segment of it just crashed and burned. Most of the companies went under or pivoted away, and AI was generally regarded as a massive failure, particularly in the business world. It had cost a ton of money, it had promised the world, and it hadn't delivered. And the impact was big enough that even the term artificial intelligence had a stigma about it, and for many years if you wanted investment or funding, the last thing you wanted to say is you had an artificial intelligence project. Nobody wanted to know. This period is called an AI winter, and there has been more than one AI winter, a long, dark time of no money for it and no interest in it. And there are companies to this day that avoid using the artificial intelligence term because of all the baggage it has.

## AI Cliches: Good and Bad

More than anything else I teach, artificial intelligence is full of cliches, things that everybody kind of knows about this. And we have to identify and get past some of them. And I don't just mean the old AI will inevitably try and kill us all story because some people think that risk is something to be taken very seriously. But there's even visual cliches about this. For example, have you noticed that in our current culture, artificial intelligence has a color? Apparently, we all think AI is blue. Now, if you're thinking, Simon, what are you talking about? What do you mean, AI has a color? Well, let me prove it. I'm going to do an image search on AI. I will gather different pictures from all over the web associated with this word. Thousands of images created by countless different artists and designers, but it's like most of them thought they were only allowed to represent AI in one of two ways, a wireframe image of a brain, which must be made of nodes, or a robot, but not just any robot. It must have a white plastic face, and for bonus points, exposed head wiring. And notice, almost everything is blue. And this isn't just true for images on the web. It's true for book covers, and you'll see the same thing in presentations. It's like all the graphic designers had a meeting and agreed, Well, AI is blue, obviously. I'm poking a bit of fun of this, but there is a point. I want you to start to notice these cliches. So the next time you see a book or an article about AI and the first thing you get is blue image of robot with creepy doll face, you think, Okay, seen this before. What other AI cliches am I about to get? And the thing is some of the cliches about AI are actually useful. They give us starting points. They give us ideas to talk about, but some of them aren't, and I actually think these images are slightly harmful. They're slightly misleading because when we're talking about real-world applied business-focused artificial intelligence, there're two things we're usually not trying to do, model a brain and create a robot. Now let me be clear, both of these ideas, brain modeling and robotics, are active areas of AI research, and there was a time when a lot of AI research took this neurobiological focus, and we thought that success would only come from deeply understanding the physical structure of a biological brain and creating a software version of all the neurons and synapses. But while that is one approach to AI, it is not the only approach, and many of the practical successes of recent years have taken completely different strategies. They're often more to do with statistics than biology. And if you read articles and books and presentations about current applied-business



focused AI, to be honest, it's mostly about the practical techniques that have nothing to do with brain modeling or robotics. But they bombard you with supporting visuals that imply this is all about brain modeling and robotics. But I said there were some useful cliches. And, next, I want to talk about perhaps the most common one you'll find in movies and TV and novels, the idea of an AI that operates at the level of a person.

## General vs. Narrow AI

In most fiction about artificial intelligence, it's used to generate an entire personality with a wide range of abilities. Sometimes that fictional AI has a body, whether humanoid or machine. Sometimes the AI is running on a computer behind the scenes, and the interaction is with microphones and speakers and screens. But in either case where, that fictional AI is typically capable of complex, multilayered conversations and behavior similar to possibly higher than the level of a human, and where it's not just capable of a few specific narrow tasks, but is generally intelligent, it's capable of many skills and capable of learning new skills by itself. And this is what's known as artificial general intelligence, or AGI, also called strong AI or full AI. Now just to be clear, this is still hypothetical. It's theoretical. We don't have AGI yet. It's not even the goal or the expected outcome of a lot of what we do. But we do have the other kind of AI. Some call it weak AI. I prefer the term narrow AI because weak is a word that implies failure, implies deficiency, and we're talking about AI that is often extremely powerful, something that can typically outperform a person but only in one specific narrow ability. So we already have AI that can play chess better than anyone in the world. We have AI that's great at spam detection and getting better. We have AI that's wonderful at recognizing faces. We have AI that can scour massive amounts of data like search engines or recommendation systems and provide insights about that data. But with narrow AI, we understand that just because a computer program might be superb at detecting a spam email or recognizing an abnormal heart rhythm, it doesn't mean that same program can also play chess, compose a sonnet, and recommend the next TV show to watch. And that's okay. For the most part, we're not actually looking for general intelligence from it. What we want is specialized intelligence, narrow intelligence, because we're trying to use AI to accomplish or understand something in particular. We want a program that is task specific. Now, if you're wondering, So, is anyone actually trying to develop artificial general intelligence? Oh, yes, there's billions being invested in this. There are lots of organizations working on this right now, but I'll name just two, for example, DeepMind. And I'll quickly point out DeepMind should not be confused with Deep Blue, which was a chess playing AI developed by IBM. Now DeepMind is a company now owned by Google and is very specific that their aim is to build advanced AI, sometimes known as artificial general intelligence, or AGI. Another example is OpenAI. That's a research lab that has billions in investment from companies like Microsoft and Tesla, and their stated mission is discovering and enacting the path to safe artificial general intelligence. So, yes, there's a lot of research and development on this, but with an executive briefing course, we're less focused on R and D and more about practical applied AI. So what can we actually do with this right now on? And let's step into one of the ways we can implement a narrow AI today using machine learning.



# Introducing Machine Learning

Over the last few years, the most widespread, successful, and practical approach for most companies implementing AI has been with machine learning. And the success of it has even lead to some confusion about the terms. Machine learning and artificial intelligence are often mentioned together so much that they can seem like they mean the same thing. And they don't. As you're probably beginning to realize, artificial intelligence is itself a rather broad and sometimes vague term that encompasses, well, all the various approaches we could use to make a computer program do something smart, and machine learning is a set of specific techniques for achieving that. It's not the only way to implement AI. Machine learning, or ML, is a type of AI. It's a subset of it. So all machine learning is artificial intelligence. But artificial intelligence includes other things than just machine learning. Now, in a regular, conventional computer program situation, we would try and get the computer to do what we want by explicitly programming a bunch of rules and very specific instructions into it, lots of commands and conditions and if/then statements, if this number is higher than that number, then add these two things together, if this date is less than that other date, then generate error message, if the position of the asteroid on the screen is the same as the position of the spaceship on the screen, then play boom sound effect on display Game Over. Now, make no mistake, conventional rule-based computer programming is fantastic when you know what your rules are and you can define them. But when we use machine learning, we try and get to the results that we want not by providing a bunch of rules to follow, but by providing examples to learn from. Let's say I was trying to create a computer program that could take a small digitized image and recognize handwritten numbers, handwritten digits in that image. Well, let's make it even simpler. I just want to write a program that could recognize the number 3. If I take the conventional approach, I might try writing a program that would look at each individual pixel in that image, one by one, figure out if it was light or dark, and then try and think of all the different ways people might ever write a number 3 in this grid. Sometimes it would be straight. Sometimes it would lean to the left or the right. Sometimes the top loop is smaller than the bottom one. Figure out all the rules, go step by step in trying to envision every single eventuality. Now to be clear, this would be hard, tedious work, and with this particular problem, very easy to get it wrong. With machine learning, we begin with actual data. In this case, that might mean perhaps 1000 or 2000 different images of a handwritten number 3, and we would use the data itself to build our program. We would take our data, our examples, and we would feed them into a machine learning algorithm, also called a learner, in a process which is called training a model. And we often provide both positive and negative examples. So here're a bunch of examples of what we are looking for. Here are a bunch of examples of what we're not looking for. And after we've trained a model, we could then expect to be able to take a new piece of input, a new handwritten image, and then have that model tell us, Does this new image look like a 3 or not? It doesn't mean the computer truly understands what 3 represents and where it fits or even how to write one. It doesn't. We've just provided enough examples, it can recognize the characteristics of that thing. And this is one of the tasks machine learning is very, very good at, classification. But let me be clear, classification isn't just about images. It works on any kind of data. We could take the same concept into things like, Is an incoming email spam or not spam? Or if we have a bunch of web site activity data, could we use it to figure out the typical characteristics of high-value customer versus low-value customer and then be able to

recognize earlier on when that's happening? But there is a catch. Machine learning can only work if you have data to learn from and not just a little bit. You want a lot of data, and you want good quality data. That's why there's been such a focus on data collection and big data in the business world over the last few years. If you don't have good data, you have nothing for your machine learning algorithms to learn from. Now a common question at this point is, If we do this by taking some data and feeding it into a machine learning algorithm, well, what is that? Where does that machine learning algorithm come from? Well, let me show you.

## Machine Learning Platforms & Frameworks

Machine learning requires data, and it requires machine learning algorithms that can learn from that data. And when you're new to this, you might wonder, Okay, so did the software developers in my organization have to write these machine learning algorithms? No. The majority, the overwhelmingly vast majority of companies do not need to write and never need to write machine learning algorithms. Instead, we can find a machine learning algorithm somebody else has already written, and we can feed our data into it. But, Simon, you say, you're telling me we just pick some machine learning algorithm off the shelf, and we can just shove our data into it? Well, it's a bit oversimplified but yes. The same way that when we want a database, we would typically choose an existing database management system. Or if you want to make a website, choose an existing web framework that applies here too. When you're using machine learning, you're typically going to choose an existing machine learning platform or machine learning framework, and there're a lot off them, both commercial and open source. It's extremely common to use a cloud-based hosted machine learning platform. For example, Microsoft Azure has one of these, Google Cloud Platform has one, as does Amazon AWS, as does Alibaba, IBM Cloud. They all provide the frameworks and a set of tools to help you do all this, and they have multiple machine learning algorithms we can actually pick and choose from and apply to our data depending on what kind of task we're trying to do. We don't need to write these machine learning algorithms ourselves, and this has been the biggest enabler for the huge growth of applied AI in the last few years. It's this combination of having these pre-prepared machine learning frameworks ready to go, together with the computing power you need to run them in the cloud where you only have to pay for what you use, and it's reduced the barrier to entry. It's made it so very simple to start doing this. But even though we may not write these machine learning algorithms ourselves, there's still a lot of work to do. You can't just feed all of your corporate data into some machine learning algorithm and expect it to understand it all for you. And the most important part of this entire machine learning process is preparing the data, understanding what it is we're looking for, and then filtering that data, cleaning it, labeling it. If your data is full of garbage, full of invalid values and missing values and conflicting information, it doesn't matter how good the machine learning algorithms are. As ever in programming, you put garbage in, you get garbage out. If you have a team of people working on machine learning projects, this is one of the responsibilities of the data scientist role, transforming the data into something meaningful, something usable. And after that, choosing and applying the different machine learning algorithms. This is another part that takes time and attention and, most importantly, understanding what it is you're trying to find, what you're trying



to do. Most data scientists will tell you it's not a single task. It's a process. They'll often experiment with several different machine learning algorithms and test them to see which ones are giving the best results for the current problem. In an introduction like this, we can only scratch the surface. If you're interested in learning more about machine learning, I have an executive briefing course just on that here, at Pluralsight.

## Deep Learning and Neural Networks

Earlier, I showed that visual cliché of the wireframe brain, and I said a lot of the recent successes with AI used other approaches than modeling a brain. And when you're using any of the popular machine learning frameworks, you can choose between a lot of different pre-written algorithms. They have names like support vector machines and decision trees and logistic regression. I'm not expecting that you know the difference between all of these. I'm just naming a few examples. But many of them are based on ideas and statistics and probability. They have nothing to do with the brain. However, just as machine learning is a subset of AI, there is also a subset of machine learning called deep learning, which uses algorithms that are more to do with the brain. These algorithms are called neural networks or artificial neural networks to distinguish them from the real biological neural networks like the ones we have inside our skulls. Now it'd be an exaggeration to say these algorithms are actually modeling the brain. It's more accurate to say they're inspired by a teeny little part of it. The idea that our brains have all these neurons and synaptic connections, neurons with multiple connections to other neurons. And in an artificial neural network, that idea is somewhat modeled. There are simulated neurons, individual nodes that could be connected to and send messages to multiple other simulated neurons. An artificial neural network is made of multiple layers. There's always an input layer and an output layer and typically at least one hidden layer in between them. When it's more than one hidden layer, we call it a deep neural network, which is where the deep and deep learning comes from. And each node, each neuron is capable of performing some small function, some small computation as data flows through this. Now this is still machine learning, which means we have to provide examples of the results we're trying to get to. We provide examples of what success looks like. So, a neural network, when we're training it, can take some input, and it will start passing it through the different layers, all the different nodes, and doing this again and again and again. And as operations are performed on each piece of data, the output from the different nodes will lead to results either closer to what we're trying to get to, in which case those outputs become weighted and the connections become strengthened, or the data will skew further away from what we want, and the importance of those connections becomes minimized. If this sounds a little abstract in high level, it is because there really isn't much further I can go into neural networks without starting to say things like stochastic gradient descent and back propagation. And this isn't that course. So, instead, let's focus on this idea. What's it good at? Well, deep learning, using these deep neural networks, that's what's given us the best results in complex situations like image processing, facial recognition, speech recognition, and complex game playing. It's capable of very impressive, very profound results. But there are a couple of downsides. Training a deep learning model can be much more computationally intensive and take much longer than taking some of the other simpler machine learning

methods. And part of that reason is that deep learning also typically requires a lot more data to train properly. Now it's always difficult to say exactly how much data do you need to train a model. It's very situation dependent, but certainly it wouldn't be unusual to expect to have tens of thousands or even hundreds of thousands of examples in order to train a deep learning model well. But once that model is trained, it can be extremely powerful. Deep learning is often used for things like speech recognition, understanding language, and that's what we're going to talk about next.

## Natural Language Processing (NLP)

Hey, vector, I have a question. What is natural language processing? The condition of natural language processing, the branch of information science that deals with natural language information. That's technically true, but it's one of those times where the dictionary definition really doesn't help very much. Natural language processing, or NLP, is that area of artificial intelligence that deals with recognizing, understanding, analyzing, and even emulating the typical ways that humans communicate using either voice or text or both. Now these days, you don't just see the NLP term, but you'll see NLU for natural language understanding and NLG for natural language generation. And, really, these are just refinements. They make it clear what direction is a particular communication going in. So if I'm speaking to or writing to the computer, it needs to understand my natural language. And if the computer is constructing some voice or text to send to me, then it needs to generate that natural language. So both NLU and NLG are part of NLP. Okay, a well-known example is using any of the various personal voice assistants. I don't want to wake up any device you may have, so I'll just say, Voice assistants, like (beep) or (beep) or (beep) or (beep). And when you talk to these devices, it's far more than just speech to text. It's more than just this basic dictation idea of, Can the computer recognize a stream of individual words? Now the computer needs to actually understand what it is I'm talking about, and the variety of different ways I might phrase the same thought. Now when you're in school, you probably went through this process of taking a sentence and identifying the different parts. These are nouns, these are verbs, these are adverbs, and so on. But the goal of natural language understanding is deeper. It's about identifying the meaning, the semantic content of the sentence, even when it's not a well-formed sentence at all. Was it a command? Was it a question? What's the subject? What are the key words? And what is even the tone, the sentiment, or the emotion of this? Now it's very easy to think, Well, yeah, but my company isn't making a new voice assistant, so this doesn't apply to me. But it probably does because the ability for AI to understand and generate natural language is becoming increasingly common in basic customer support situations. I mean things like marketing and social media management. One example of NLU is in automated sentiment analysis. In a situation where you have online reviews or comments, to have a process that could scan and identify whether they're positive or neutral or negative, even perhaps making judgments about emotion, Are any of these customers happy? Are any of these customers angry?, and deal with any major issues before they get out of hand. And beyond that, we're seeing more and more use of conversational interfaces, what are often called chatbots. Now chatbots can be text based, and they can be embedded on a web page. They could be contained in a social network messaging app

like Facebook. Or you could perhaps interact with them by sending SMS text messages. And while early chatbots were very formulaic and scripted, very frustrating if you stepped outside the boundaries of exactly what they expected, these are becoming more and more capable at dealing with many of the basic, repeated, and predictable customer interactions. It's also becoming very common to integrate our own applications with voice assistants, like (beep) or (beep). Think of how the expectations have changed over the last few years that maybe a decade ago an application might just be on the desktop, and then everybody expected to also have a web-based interface to it and then also have a mobile interface to interact with it. And now we're getting to the point where people want conversational interfaces to that same app. But, thankfully, if we want to do this, we don't have to build all this technology ourselves because just as there are general machine learning frameworks, we can also find multiple options to build or integrate conversational user interfaces. Amazon AWS offers cloud services like Lex. There's also Polly, which can generate realistic-sounding speech. An iOS developer could use SiriKit to integrate their app with Apple's voice assistant. Microsoft Azure has the Language Understanding Service. Alibaba has Intelligent Speech Interaction. IBM offers Watson Natural Language processing, and you can expect any AI platform will offer some kind of a specialized service about this. Let's actually use this to step a little more into the marketplace of AI solutions and AI vendors.

## The AI Marketplace

I want to talk about the various vendors, products, and solutions on offer, but do keep in mind this is an incredibly volatile industry and a volatile time in that industry. New startups appear all the time, companies get acquired, names change, products change, but what I can talk about is more generally how to look at this and how to think about what's on offer. But there is a category of AI-related companies I am going to intentionally avoid talking about, domain-specific areas like AI solutions targeted at healthcare or AI for the legal industry or solutions for transportation or hospitality or human resources, simply because we would be here all day. To even provide a high-level overview of AI in healthcare, I could easily spend an hour on just that and barely scratch the surface. So for what's currently going on in your specific industry with AI and machine learning and deep learning and NLP, I will leave that as an exercise for the viewer. I'm going to focus here on some of the more generally applicable options. Now I said something in the machine learning section, which I'm going to say again. The main reason for the incredible growth in applied AI over the last few years, the biggest enabler of all of this has been the large commercial cloud service providers offering these services. Now the order of the top companies changes slightly depending on where you are in the world, but we can say Microsoft Azure, Amazon Web Services, or AWS, Google Cloud Platform, Alibaba Cloud, IBM Cloud, Oracle Cloud. There are others, but we'll leave it at this. They all offer a variety of pay-as-you-go artificial intelligence services you can tap into. They're ready to use together with all the computing power you need to run them, but where you don't need to build your own data center and you only pay for what you use. And this has been what's reduced the barrier to entry and made it also very simple to get started. Now, to be clear, you don't have to use any of the cloud-based providers. There are open source machine learning platforms and frameworks like TensorFlow and PyTorch,

software a developer could just freely download and install. And when I'm talking to people with some programming background, but no experience in AI or machine learning, I'm often asked, what's the most common programming language for this? Now, recommending a language is always a contentious task, but for anyone with some background looking to take the next step, or even just wanting to experiment, my default suggestion is simple. Python. Yes, there are other languages popular in the AI community, and if you're already working in a particular environment or using a specific technology that favors another language, let's say R, which is another common programming language in AI, then of course use that. But otherwise, Python is never a bad choice. But, if someone's intending to take that next step, there is one more aspect. Not just how to do this, but how to do this responsibly.

## Issues, Risks, and Ethics in AI

We began this course with a cliché, and we're going to end with another one. AI is incredibly powerful, but with great power comes great responsibility. And we've become very aware in recent years of harmful consequences of AI, sometimes intentional, sometimes unintentional. And one of the unintentional side effects would be algorithmic bias. One well-publicized situation was where machine learning was used to try and streamline a recruitment and hiring process, to attempt to recognize good candidates more quickly. Sounds fine, but the model was trained on 10 years of actual resumes, real data about the qualities of successful candidates. Sounds great. But this was in computing, which is male dominated. So just on pure numbers alone, what that meant is most successful candidates over the last 10 years were men, and that unintentionally became part of what the machine learning model thought it was supposed to look for. What does a successful candidate look like? A man. So does this new candidate match that description? Nope. Then score them lower. Now, this was a situation where there was no human prejudice involved, just the nature of a male dominated profession. But it's where the model can end up not just reflecting, but indeed reinforcing that disparaging. Figuring out when this is happening can actually be very difficult because one of the very real issues is that with many algorithms in machine learning, when we train a model, what you get from it is an answer. What you don't get is an explanation of that answer. This is sometimes called the black box of the machine learning. You train the model with some existing data, you can then feed new data into the model, and it might say Candidate A is rated 2 out of 5, Candidate B is rated 5 out of 5. Why? It doesn't tell you that. You get the result, you don't get an explanation. And if you have an unquestioning culture of, well, it's what the computer says, then you might end up institutionalizing biases in the system without ever realizing it or ever having a chance to fix it. So we should always be looking at this as a tool. The machine learning is something to help us understand the data. It's not something that will understand it instead of us. We also have techniques like deepfakes where AI can be used for intentional deception, disinformation. Now a deepfake usually refers to a video, but it can also be an image or even an audio recording. It's where AI can be used to either replace a person or make it seem like they said something they didn't. They generate extremely realistic results, and they're getting more realistic all the time. But because of these and other situations, there are already various initiatives around ethics in artificial

intelligence and responsible AI. We have standards organizations like the IEEE that have their global initiative on the ethics of autonomous and intelligent systems. There's groups like Partnership On AI. This has over 100 member organizations, including Apple, Microsoft, Amazon, Google, Accenture, trying to develop guidelines and best practices about safety and transparency in artificial intelligence, because there is an understanding that this is incredibly important and it isn't just going to happen by itself. Because going back to that very first cliché that AI always end up wanting to kill everybody, well, we've had people like Elon Musk, Bill Gates, and Stephen Hawking all raise serious concerns about what is likely to happen if we're not thinking about how to create this ethical, responsible AI well in advance of it actually happening. Or as Professor Hawking said, "Success in creating AI would be the biggest event in human history. Unfortunately, it might also be the last." Interesting times ahead. I hope you enjoyed the course. See you next time. We hope you enjoyed this course. If you're interested in more content for technical leaders, content we keep short and focused with the up-to-date information you need to be informed and make decisions, but without getting buried in the details, find other courses like this at [plrsig.ht/exec](https://plrsig.ht/exec).

# TQ AI Aftershow

## AI TQHQ Introduction

Artificial intelligence is everywhere, and we're here to talk about it. We've got Paul Daugherty, Simon Allardice, and more guests to help us get intelligent on AI. It's all coming right now in your TQ home base, the TQ HQ. Hello, and welcome back to our TQ after show here at TQ HQ. Paul and I are looking forward to talking with some great experts and new learners about our latest topic, artificial intelligence. Hopefully by now you've heard Simon explain what AI is, what it does, why it matters, how it works, and how it is applied. In this segment, we'll talk to our AI and data experts to clear up some myths about artificial intelligence. We'll discuss Accenture's role with AI, and always, we'll hear about some great client stories along the way. In addition to Paul, I'm thrilled to have two learners, Julia and Dan, with me to help me ask some basic questions of our great leaders on AI and data. And speaking of phenomenal leaders, we'll be joined by Shail Jain, Athina Kanioura, Laetitia Cailleteau as we dig into the vast and complex topic of AI. So welcome to all our guests, and Paul, thanks for co-hosting with me. Today, we're going to be talking about AI. -Yeah, AI is a great topic, artificial intelligence. It's something people hear a lot about, and we prioritize it early in the TQ series because it's something we all need to learn a lot more about. And yeah, I think you know, Sarah, that AI is being hailed as one of the biggest technology developments. I've called it the alpha trend, you know, the biggest trend of the trends that we're going to see over the next 3 years, 5 years, and 10 years. And it's the trend that's really going to shape the way we live our lives, the way we do our work at Accenture more so than any other technology, and I'm really excited for this session and to really help everybody at Accenture learn more about what's happening with artificial intelligence. -Yeah, it's big. I mean, it's a huge topic, and there's so much to learn, but we're in the right place. And I'm really



glad that we have this topic and we have it early and we're really going to talk about this. In this show, we're going to introduce a little segment called Fact or Fiction. So as Paul said, there's a lot to learn, but we've got a game that's going to help us all figure out what is really fact about AI and what is really fiction. So let's introduce our guests. Today, here in the studio, we have two new learners joining us, Julia and Dan. Thanks for being with us. -Thank you. Excited to be here. -Great. And we have Shail Jain, our North America data lead. Thanks for being with us. -Good to be here. -Thanks. And remote from the UK, we have Athina, and she is our lead for applied Intelligence. And Athina is going to cover much more about what we do with applied intelligence in a few minutes. We're also lucky to be joined by Laetitia, who is our lead for conversational AI, and I'm sure we're going to actually learn what that means. We'll also hear from Simon Allardice, professional explainer.

## Applied Intelligence

So, Paul, let's just jump right in. As we think about applied intelligence and artificial intelligence, what is the difference between those two, and what do they really mean? -We'll get to artificial intelligence in a minute, and we're going to spend most this TQ segment talking about that. Applied intelligence, though, is really important understand. Applied intelligence is the name that we at Accenture have given to how you generate the impact with AI, artificial intelligence, but also with analytics, automation, and then all powered by data. So if you think about it, it's the automated, the intelligent automation of our clients' processes. It's the analytics to generate insights. It's the artificial intelligence to really provide new levels of intelligence and insights in our clients' businesses, all powered by data, and we call that applied intelligence. It's putting it all together end to end to deliver big outcomes for our clients. Now, artificial intelligence is, if we get to that term specifically, artificial intelligence, a simple way of explaining it is it's really, simply put, systems that approximate our human ability, you know, human-like abilities of intelligence. And we at Accenture have a definition that we use, where we say it's, artificial intelligence is about systems that can sense, respond, comprehend, act, and then learn and improve as we go. So sense, comprehend, act, learn. And that combination of capabilities is really what defines artificial intelligence. So it's not just doing, a computer doing what we tell it to do. It's a computer generating insights, learning from the environment around it, and improving its performance over time. And that's really what we mean by artificial intelligence. -Great. Yeah, and it does sound like it encapsulates so many different things. And as we think about it, you know, the first thing that comes to mind, Paul, is, well, don't we, as humans, already do those things? I mean, we can learn, we can sense, we can act, so why do we need applied intelligence and artificial intelligence? -Well, I think that's one of the things that scares people little bit sometimes because they hear human-like abilities, and you start thinking of the machines taking over. And our view, as you know, is very much different. We've talked a lot about Accenture's leading perspective. Really, that's around human plus machine. This is about yeah, the smarter capabilities of AI, but we strongly believe that smarter technologies, smarter systems, when paired with people, make people more effective. So it's really about smarter systems combined in smart ways with our human intelligence that allow us, as people, to do things more effectively. And in the work we do in the applied intelligence work we do at Accenture, we see time and time again how we can

combine the smarter technology, combine applied intelligence, artificial intelligence, you know, and modify the way people are using technology, adapt jobs using the technology that people can do more. -Okay. And I do like that you got a plug for your book in there, Human + Machine. Yeah. So it's starting to come together, it's starting to make sense, but there is a lot to learn. So, Julia and Dan, you're new learners on this journey of artificial intelligence. Is it starting to make more sense to you? Is it coming to life? -Yeah, definitely. Definitely making sense. What I'm interested in is learning a little bit more about specific examples of how we're doing this with our clients. -Yeah, I mean, that's the story, right? So we've got applied intelligence. We've got artificial intelligence. What are we doing for our clients? So, Athina, let me ask you. You lead our applied intelligent practice. What can you tell us about how we're helping clients with AI? -Applied intelligence focus, as Paul mentioned in the beginning, it's all about driving industry differentiation. It's new client outcomes in this modern trapped value. And if you were to look at the full value chain of a client, whether it's about workforce transformation or better customer experiences or introduction of new products and services, applied intelligence role and the role of artificial intelligence is to bring the scale, the automation, and actually provide the humans the ability through the tools, the data, and the solutions that we have to scale across the enterprise. So if we were to think of clients like Vodafone, where we are using artificial intelligence and conversational AI to drive better customer experience, by deflecting the calls from the call center to more digital channels, driving much more efficiencies in the way they do customer service, increasing customer satisfaction by more than 70%, reducing the calls by 100,000 calls within a period of 3 months, this is the power of applied intelligence and artificial intelligence for a major Telco. If we were to think of consumer goods company, so we are working with a major alco-bev company, but they want to generate the new revenue streams, so they want to fully organize their front office and their commercial organization to be much more AI-driven in the way they go to market, they open new markets, they introduce new products and services for their clients, and directly to the consumers, not just the customers. We have developed an end-to-end solution based on one of our major technology partners that drives revenue management across the value chain, but also linking that with supply chain. So, the differentiation that we bring as applied intelligence is plugging all those capabilities, assets, and accelerators to integrated solutions that are powered by our ecosystem partners, our proprietary tools and IP that we bring to bear, and, of course, our industry depth and functional depth that is, you know, unbeatable in the market. -Yeah, that's amazing. I mean, the results that you can drive and the power that you can bring for our clients, helping them deliver value, that really helps bring it to life. So let's, yeah. -I think the way Athina described it is perfect and really important, and it gets to why this is so exciting for Accenture and for everyone at Accenture, because what we have, what is at Accenture's core is industry depth. You know, we know industries better than anybody in depth, every part of an industry and a process and how it works. We understand the function and capabilities. We understand supply chain. We understand customer experience in the areas Athina talked about. And we understand change and how to drive big change and transformation for clients and how to also create experiences, develop the technology, and run the operations for clients. If you think about what Athina just said, this is about transforming businesses. This is why we're so excited about AI and the opportunity not just to do cool things and work with a fun technology, but to really in the next, the next era of business, the next era of Accenture, have it really use AI

as a tool to transform business and really differentiate everything we do at Accenture powered by, you know, applied intelligence. -Yeah, I mean, it reminds me of the conversation we had about cloud. It's so much more than the technology. It's a different way of working. It's transforming business, and the opportunities are endless. -And that's why it's a discussion to C-suite as well. Athina and I and the team here, we're talking to CIOs, to CEOs, to CHROs. C-suite is interesting because it's impacting every part of the business, including the strategy in the boardroom.

## Conversational AI

Well, Laeticia, we keep talking about conversational AI, but what does that really mean, and how can you help us bring that to life? -So conversational AI is a new way to engage with the system. In the old days, you needed to kind of learn SAP or learn how to use Excel and all of those kinds of things. But now you can actually directly speak with the system and interact with the system in a more human way. It's a little bit like when you go on Google, you ask a question, and you get the answer. So conversational AI is a little bit of Google off the brand. You want to go direct to the content and really get the straight answer or actually go through a process. So that's that new way. Obviously, natural language is a key component of it, but you can actually mix up a number of human-like technologies, like Vision and things like that. We have amazing examples of what we're doing with conversational AI across the world. A lot of consumers are demanding that kind of interaction, and we have deployment at the Irish Revenue, for instance, where we actually introduce VoiceBot to actually do tax claims and processes for our citizens. We have deployed conversational AI interfaces with messaging at Enbridge in Canada where people and consumers can go and sort out the problems in a new way just by having those snippy snappy interactions when they want on their own terms. They can use Facebook Messenger. They can use WhatsApp, whatever is the best means for them. They can do it in between their meetings. They don't have to be stuck on the phone anymore. So we're really changing the game on how humans are actually interacting with the system. -It really is amazing how much it changes your life. I'm pretty sure my boys think every answer in the world just comes from Alexa. And that's all they need, right? -But, again, just adding to what Laeticia just said, first of all, one of the favorite places for me to visit in the world is going to Laeticia's studio in London where she has all the technologies of these conversational agents and seeing the systems we've built with conversational AI, the ones she mentioned and more. It's really fascinating. And it really is about, conversational AI isn't just about the chatbot per se, the simple things you say. It's really transforming the way workers interact with their technology. And it changes the way you do business, and it's really transforming transfer of information for consumers. There're examples in healthcare, the government examples, consumer goods examples as well, where it's helping people get information better. It's making our experiences better with companies, and that's really why conversational AI is so important.

## Role of Data in AI



Data. Let's talk about data because that's really underlying a lot of what we're talking about here. And I think for this question, I'm going to hand it over to Simon, who's our professional explainer on all of our TQ topics. So, Simon, welcome back, and thanks for joining us again. So I know you've talked about this in your course some, but I know that data is a very fundamental key success factor for AI, so can you talk a little bit more about the relationship of AI and data. -Hi, Sarah. Hi, Paul. Thanks for having me back on. And yes, happy to take this one, because as soon as you take one step into the AI world, you'll start hearing about data and the importance of data. Sometimes there's a misunderstanding as to why. Someone might even think, well, obviously we need data. I mean, all computer programs need data, so there's nothing new here. But it is a little different because when we do conventional computer programs and applications, we mostly think about data as something we use as input for a finished computer program, that after the developers create that computer program, we will then take some data, run it through the program, and get a result. But with AI, and particularly machine learning, it is different because we want good data right at the beginning of the process before we've written anything because we're going to use that data to create the program in the first place. We'll use that data to learn from to train our model. And we don't want just any old data. We're hyperfocused on having good quality data. And when people are new to this, they're often very surprised by how important this stage is, how much time and effort is spent on this upfront work of collecting the right data, of checking it, curating it, cleaning it, preparing it. But the thing is, if you do that part well, what comes after it is comparatively easy. The better data we begin with, the better our model can be. The more data we have, the more examples it can learn from. The thing is, data has always been important in programming. It's now more important than ever. And this focus is not going to go away. It's why so many organizations are trying to implement a general wide-ranging data collection strategy, just capturing as much as possible. It's true we may not even know exactly how we're going to use all the data we're capturing, but if we don't start capturing it, we're not going to have the option to learn from it later. -Thanks, Simon. I mean, data, we really can't talk about AI, Paul, without talking about data. Wouldn't you agree? -Yeah, you know, data is real, people use different terms, data is the fuel of the AI systems or whatever you want to say, but, you know, data, artificial intelligence technologies work by ingesting data and learning patterns from data, and so it really starts with the data, which is why data has really become a strategic issue for clients. When you're talking in the C-suite and talking to our clients, again, about artificial intelligence, one of the things our clients are really grappling with and one of the roadblocks is data and properly understanding their data. And there's no better person to help us on the data topic than my friend Shail here who's doing a lot of great work and has spent a career around data and helping companies with data. So, Shail, why don't you tell us a bit more about data and how we're helping clients. -Sure. So, data, as you know, is the lifeblood of AI, and really, there's been two major developments that have sparked the interest and the momentum that we see in AI. One is the massive computing power of GPUs. But more importantly, is the availability and abundance of data that's being generated through the internet, the social media, the personal devices, and the sensors. And the more data you have available and the more varied the data is, the better is the ability of the algorithms to recognize patterns and to be able to predict the outcomes in the future as well, which is really, is the foundation of AI. So, AI is not magic. AI is really data. Now, what are the challenges with data today? So data is vast, fast, dark, and dirty, so only,



less than 10% of data is being actually analyzed. So we have a tremendous opportunity to really further enhance the ability of the algorithms that we have and bring about more AI, if you will. Then the biggest challenge with data is also it's actually locked up in silos, so it's not interoperable. And the pure power, the sheer power of data is in combining data from disparate sources and making magic out of it. And now, with AI coming into the human world, you really need insights to be served at the speed of thought, steep speed of action as well. So you, it's the old, bad systems of doing analysis are not good enough anymore. You need real-time systems to do the analytics as well. And if you look at the the world today, they're stuck in in three different sort of paradigms. One is companies have siloed the data trapped in these monolithic systems, ERP systems. Or you have companies that have invested in large enterprise data warehouses, but they are not agile, they're not fast enough to move. Or third is people are struggling with cultural adoption issues with AI as well and, therefore, data. -That's the thing that you can imagine is the amount, as you said, the more data, the more powerful, but the more data, the more complex and overwhelming I can imagine as well. What about, Dan, do you have a question on this topic? -Yeah, how is it that you, with all of that data, how do you get it right? It seems like a pretty massive undertaking. -Yes. Yes, it is. Yes, it is massive indeed. And what we're advising our clients to do is really take a three-pronged approach. One is to have an enterprise-wide strategy for data. Much like businesses have been successful in developing a technology strategy that dovetails their business strategy, the time has come for corporations to really treat data as a corporate asset and therefore have an enterprise data strategy, if you will. Now, what does that do? It does three different things. One is it actually gives you an operating model, governance model, that tells you how to treat this as a shared enterprise resource. It also gives you a capabilities roadmap and a technology footprint. And lastly, it gives you a cultural adoption strategy. Because as any major technological advancement, it runs into challenges with culture. So to the extent it can handle the culture, you can bring about the changes as well. So that's number one. Number two, we're also advising clients to invest in building an enterprise-grade data foundation to, number one, make things interoperable across the silos, also to democratize analytics. You want to make it self-serve as well. And the third is biggest challenge with data, it's not trusted today. So how do you make data more trusted? Which means you have to put data in the context of the business. You have to make sure that people understand where the data comes from, what has happened to it in the process, and its veracity. Like, how many people are really using the data, and what do they think about it? So you need a platform that enables all the data supply chain and this this marketplace, if you will. And the third thing is that you need to invest in data literacy, which is the real change is going to come from the grassroots, not from the top down, which means people have to become data citizens. They have to understand the value of data, the power of self-help tools, analytical tools that were available, and lastly, the responsibility they have as data citizens, to make sure the data that they have in their world, their purview, is of the right quality as well.

## Data and AI Client Stories

I love this concept of data citizen. It's the responsibility of it and getting that literacy. Have we seen results with our clients where we've been helping them with this area? -Yes. So let me talk about a story of a healthcare





client that we've been working with. Healthcare, as you know, accounts for roughly 18% of GDP for the United States, and it's rising fast. So every healthcare company in the world today is focused on, How do I use data and analytics to bring about better cost savings, but also better health care and quality of the care as well. So this company we've been working with for a number of years, they've had projects in the past, what I call fireworks projects, where they've had specific data pipelines built for specific use cases for disease management, and they've had some success with it. But the success is not pervasive. It has not become a sustained innovation sort of a scenario for them where. They have not been able to make a tremendous impact thus far. So they came to us, and they engaged with us in a data strategy. And with that data strategy, we built a platform for them, which actually enables self-service. And one of the most important things that it did was it exposed the data that's available to the people, both internally and externally, and put in the business context. So they can understand what the data is. They can trust the data. And they can create these sandboxes to do analytics as well to the extent that this company now has become a leader in using what is known as social determinants of health, which essentially are factors that you use to control health outside of the four walls of the hospital. For example, do people have access to housing? People have access to good meals. They have access to transportation. So they've taken data, medical/clinical data, demographics data, data from their purchasing power, if you will, and also data from sites like PatientsLikeMe to create analytics to come up with specific population segments where, if they can offer them a coupon to Uber, maybe they can get to doctors in time. If they can give them a supplemental meal delivered to them wherever they are or help them with housing if they're homeless or give them counselling if they are suffering through domestic abuse or drug abuse if you will. So these little changes of outreach have not only increased the quality of care, but it is estimated that this company is going to save hundreds of millions of dollars in the coming years as a result of this data platform that they built and the analytics that it has enabled. -That's a great story. And for a while we've said there're really three things, three key things you look at with data. You capture the data, you curate, and then you consume it. And I think that's really the focus we have with a lot of our clients is establishing the processes to do that. And one other new thing that I'm seeing come in, and Athina's team is doing a lot of great work on this, is data monetization. How do we help clients monetize their data, new data services and such? And, in fact, at Accenture, Athina's team is even curating our own data services that we have and that we own and that we then inject into the work we do for clients. And this is another exciting growth opportunity for Accenture. -Yeah, it is. And I know we have lots of other great examples. I think we heard the McDonald's example before, which was also another great example of this. -Yeah, McDonald's, it's great. I like the french fries, they're fantastic anyway. But aside from that, what McDonald's is doing is really innovative in looking at all the data that they have. We talked about that in the Cloud TQ segment, and it's really about driving from the data to the insights and automation, what we've been talking about with applied intelligence, so they can transform the way that we all interact with McDonald's, the way we see their menus, the way that we get the food, the way that they cook the food, etc. Getting the data is a part of it, but then it's putting it all together and driving the programs that we need on top of that. -Yeah, it's a great story. And, remember, you can get more information about McDonald's,

 see some videos out on the TQ home page.

## Fact or Fiction: History of AI

So now I think we're going to switch over everyone. All of our guests get ready. We've got a little game show we're going to do around fact or fiction. So this will help us really understand more about AI and what's really true and what's really not. I think we all hear a lot about it, but sometimes it's hard to know what's true and what's not. -Are there prizes? -Well, we'll see. We'll see how you do. -Okay. So, Julia and Dan, you're going to be our key contestants, and then we'll turn to our experts who will tell us the correct answer. Are you guys ready? -Yes. -Okay. -I'm ready. -Don't be nervous; it's easy. So, first question, fact or fiction, AI has existed for more than 50 years. What do you think? -Fact. -Oh, I was going to say fiction. -Okay. Fact or fiction? Yeah, I think I could go either way on this one. Paul, what would you say? -It's a fact. -Okay. -The term artificial intelligence came at a conference, a famous conference that was held at Dartmouth University in 1954. If you do the math, that was over 60 years ago. So, artificial intelligence as a term and as a discipline was around even before that, so I think people have always been fascinated by how do you mimic the capabilities of humans using technology? So the study of it's been around for a while, and we've been through ups and downs with innovation and AI. And I think we talked about it earlier, the advances in compute, the advances in data and storage combined with some algorithmic advances around the science of AI or what's led to all the excitement in business in the last several years. -So it's kind of the perfect storm. It's the perfect time for AI to really come alive. -Exactly, yeah. -Okay.

## Fact or Fiction: Data, Applied Intelligence, Jobs

Fact or fiction: Data is the fundamental reason AI succeeds or fails. What do you guys think? -Fact. -I'm going to go with fact. -I mean Shail, I feel like he's taught us that already. Are we right? Is it fact? We listened, Shail. -Absolutely. So data is what's feeding the world today, and specifically AI well. And if you get the data right, you can get the AI right as well, so absolutely true. -Okay, great. So the next one we're going to talk about and, Athina, we're going to come to you for the answer on this one, we've talked about this, are artificial intelligence and implied intelligence the same thing? What do you guys think? -No, fiction. -Fiction? All right. I think we all agree it's fiction. Athina, are we right? -Well done. Artificial intelligence is the subset of applied intelligence. Great learners. -And, Athina, why don't you add in your view on, so why is it so important that we are framing it as applied intelligence in your simple definition? -Yes, and I will try to keep it simple, Paul. We've always believed at Accenture that applied intelligence is much more than artificial intelligence for two reasons. I think say that on the data side. We absolutely need data, data services, and data marketplaces to be able to fuel the inside generation. We do analytics, and if we were to think a bit of more technical terms, so we need the compute AI layer of artificial intelligence, i.e., we need models, we need algorithms, we need statistics, we need automation around those models. And the process is to manage those models in a consistent way. So it's the analytics layer around that. We need technology, i.e., cognitive platforms to power artificial intelligence. And that's why things like our Converse platform, things like our Ecosystem Partners is a critical component of applied intelligence. And more importantly, we need business logic. We need experiences. We need design. We are embedding design intelligence within applied intelligence so we can fuse data, design, and analytics in one single capability.

And and all of it, as I said, tailored for specific industry programs. So our supplied intelligence acts more like an umbrella of what technology has to offer, of what our businesses and our clients want to achieve at the end of the day, which is outcomes powered by technology, powered by data, and powered by all the great IP and assets that we have in Accenture. -And I think the other thing our clients have liked about our applied intelligence approach, and I have to give credit to Athina, she was the brains behind applied intelligence, is it gives them a roadmap. You can start with automation, automate using RPA, robotic process automation, and other tools to automate, make a process better. Then you add analytics to get more inside and how it's really working and measure and predict and see how you might do more. And then you can add on the artificial intelligence to really make it truly smarter and more effective. And it gives our clients a way of thinking about it as a roadmap and a sense of how to get started. -So they're not trying to jump right into AI. There's actually a way to get there. Athina, I thought it was a great simple answer, so thank you. Okay, let's move to one more. AI will replace most of our jobs. What do you think? -I think fiction, but it's definitely going to change the jobs that are available. -Okay, Okay. -I'm going to agree with that directly. -Alright. Alright. Paul, what do you think? -I was at a conference, and I was interviewed on stage by Sophia, who is an artificial intelligence robot, and she told me that my job was going to be eliminated. -Wow. -But I disagree. -Okay. -The AI will impact a lot of jobs, and AI will eliminate a lot of jobs where jobs are solely based on routine tasks and such. And our estimate supported by the World Economic Forum, OECD, and other organizations is 15% or 20% of jobs are subject to automation through AI and other technologies. But 80% of jobs get changed, and many, many new jobs get created. So our belief, based on our research supported by many others now, is that there're many new jobs created by AI, many jobs transformed, and it's all about preparing people for those new jobs that exist. And the big challenge we have isn't a world with no jobs. The big challenge we have is reskilling people so that those who are doing the more basic jobs that might be automated have the skills and are prepared for the new jobs. And that's why technology is part of the answer to that. You can train people using the technology. We can augment people's capacity to learn through technology so they can take on those new jobs. That's why Accenture's commitment around reskilling and all the issues we're doing around the world, including working with Athina, Laetitia, Shail, a number of leaders involved here are participating in these because of our commitment to really help everybody along in this journey. But the jobs will be there. And it'll be about the human-plus-machine way of creating the jobs that leverage human skills along with the power of technology. -Okay, good. And I hope your job doesn't go away because we really like you, so hopefully you can stay around.

## Fact or Fiction: Strong and Weak AI

Okay, let's move on. This is a good one because I don't think we've talked about this. We have both weak and strong AI in existence today. What do you learners think? We haven't really covered that today in weak and strong AI. -I guess I'll go with fiction. -Fiction. -I was thinking maybe fact. It seems like there's a spectrum of weak to strong. -Okay, Okay. -A 50-50 shot. -Well, Laetitia, maybe you can help us out on this one. -Yeah. So, I actually---there's a lot of work going around doing strong AI. And I think DeepMind just started to kind of be able

to use some of the algorithms in some of the games and actually move them to another domain and context. So a lot of people are trying to do strong AI, and I think we're starting to see some attempts that are a bit more successful than in the past. But that's true that in the market at this particular point in time, we can be very, very good at doing one thing in one domain, understanding a particular domain, a particular problem to the right depth, which is very sophisticated, and that typically pass some of the human performance. But we're not very good yet at transposing those kind of mental models to new domains without having humans kind of cracking in the background. One of the other things that AI is not fantastic yet at is evolution and change. So historical data is essential. And you're training your model, and you're getting some insight. But as your company's moving and everything is moving around it, having your AI continuously learn with you, if the changes are too important, this is kind of a bit challenging. So, yes, I think we are in a world where there's quite a lot of weak AI, although it's quite strong in a bucket, and a lot of people are trying to see how that intelligence can be transposed. And I think we'll see more and more of those examples coming across, but it'll be at least 20-30 years, I think, before we have that strong AI. -The other term that helps you understand the term---that was a great explanation, by the way, is weak AI is sometimes called narrow way AI because it's kind of in a specific domain, and this ability for AI to be smart enough like humans---the beauty of humans is you can see one thing---if a child drops a ball, they understand gravity very quickly. They don't need millions of datasets to understand the principle of gravity. And that's the difference between narrow or weak AI and strong AI. And I think it'll be a long, long time before you have AI that's able to cross domains and generalize to the extent that we as humans can. So I strongly agree with Laetitia. -So we'll get back together in 20 to 30 years, and we'll see where we are on that one.

## Fact or Fiction: Human + Machines

We're going to go to Shail for this one. So just a minute there, Shail. Learners, can AI exist without humans? -No, fiction. -Okay. -I, for one, welcome our robot overlords. -Well, let's see. Shail, what do you think? -So this is a debate, and I'll tell you what I said on the part of the debate. I sit on Paul's side. -Okay, that's a good place to sit. -I've read the book, and I disagree with Stephen Hawking, who would tell you otherwise. And I'll give you a simple answer just from a data perspective, being the data person in the room here, is that there's a lot of ethical bias that comes into artificial intelligence. And really the only way to call that through in data is through humans. Only we can decipher that. And to the extent there are moral issues, for example, it is hard for a robot or an AI to detect that from an outcome perspective. And the same way, if there's ethical bias built in or there's bias built into the data, that can only be detected by the humans as well. So I think in our lifetime, I think, it's fiction. -I think that sounds good. Paul, do you agree? -I agree. He gets a bag of french fries for the right answer. -Okay. Okay, good. All right, we're doing good. We're almost done here, learners. Okay, the next one is AI is difficult to achieve without the right people in your organization. Fact or fiction? -Fact. -I was going to say fact as well. -I know. I think fact too. It seems like you need the right people. -Especially Accenture. -Yeah, exactly. Paul, what do you say? -I think it's fact as well. I think you need---it's the right people in a lot of respects. I think you need the AI engineers and people who understand how to apply the technology in the right way. You need very intelligent business

people who understand, we use the term reimagine a lot. How do you reimagine the processes and rethink how you might do it? And you need to understand, you need the right people to understand the business, to understand those applications of the technology. So I think you absolutely do need the right people, and then you need---it's applying AI, again, to the way people work. So you need to engage people in the way you deploy AI as part of the transformation part of the process.

## Fact or Fiction: Accenture Differentiation

Okay. I think we're doing pretty good. All right, we're going to go to this next one here. Athina, we're going to come to you for the answer on this one. So Accenture has over 1500 AI patents. -Fact. -Fact. -Yeah, it sounds like a lot, but you said that so confidently. -I think we feel confident at Accenture. Athina, what do you say? Fact or fiction? -Oh, I got this thing, this thing. You know your facts. Absolutely it's fact. So we have 1500 patents. We have 320 AI applications spanning across industry and functions. We have 45 industry solutions. We have 23 functional solutions. So, you know, as applied intelligence and for the broader data and AI community, we at Accenture have a lot of IEP, and we are very proud because this is unique IEP for our clients that, you know, we help our clients pretty much run their business end to end. -Somebody else knows their facts. -They're both pretty good on their facts. But the, just to contextualize that, so 1500, is that a big number or small number? Fifteen hundred patents is a lot of patents. -It sounds like a lot. That's a lot of patents for a company to have, much less just a number of patents in AI specifically, and it's important, and it's it's more than our competitors have that do much more than our competitors who do similar work. And part of our strategy is differentiated intellectual property that we developed that Athina, Laeticia, and Shail and the teams develop, and that's really important to have that kind of IEP. -Yeah, when we go and talk to our clients, I imagine that means a lot.

## Fact or Fiction: Responsible AI

Okay, this is the last one. This one is an interesting one. And to be very specific, on August 25th, 2017, an AI called Skynet caused massive global destruction. Fact or fiction? -Fiction. -We're all here, so it wasn't massive global destruction. -Arnold Schwarzenegger was involved and he does exist, but it's fiction. That's from the movie The Terminator, Terminator 2, I think, was the movie, and that really grabbed a lot of people's attention. And when I talk about AI, people often bring up, raise their head, Is this going to be like Skynet? is often a question. I think that's kind of one of the challenges with AI and why we have a lot of fear and uncertainty in AI. If you look at the headlines in AI, it's almost all negative in spite of the fact that AI's dramatically improving food production. We're using it in the climate to improve the planet in a lot of ways. We're using it in India. We're doing amazing work with hunger and feeding more children with AI-powered solutions, and you could go on and on. And AI's being used for far more good than bad. But the headlines you see are about computers taking over the world, computers beating us at games and all these things. And that's like the sideshow. The real story is how we're using AI to improve the state of the world, improve business, improve the way we as people interact with the world. So we do, yes, we do have to worry about some downsides. We have to think about some of the risks



of technology. But Skynet is not one of them. -It did not happen. Well, I think you both did very well as new learners. Did you learn anything new? Was that a good--- Yeah, a lot. Learned a lot. I still can't believe AI has been around for that long, longer than I've been alive. -I was going off the Turing test. That was my main guess. Well, that was great. So thank you to all of our guests. I think that was a very informative session. So, Paul, you started to talk about this topic of responsible AI, but I think it's something that we could dive into a little bit more. It is somewhat controversial. There is a sense of responsibility and maybe even a sense of people in the unknown not knowing what AI could do. What are we doing about responsible AI? -Yeah, artificial intelligence is the most powerful technology so far in the information age since we invented the transistor and the computer. This is the most powerful technology we've come up with. And with great power comes great responsibility. And the issue is that AI, because it learns and can propagate capability, we don't have the strong AI yet, as we talked about, but because it can have---you can scale impact very quickly, AI can have unforeseen impacts. And we have now a new obligation that didn't exist with prior technologies to be more careful in the application of artificial intelligence. We're early leaders in this through the applied intelligence teams in developing a responsible, the field of responsible AI. We're early on with some of our researchers and our teams in developing that, and I'm proud of the work we've done to really take that seriously in our work so we have a responsible AI set of guidelines. We're helping clients with it. We're applying it to our own work, and it's about making sure we deploy solutions where there're humans that are accountable for decisions that are made. It's not okay to just turn an algorithm loose and let it act without some sort of human accountability at the at the end of the day. It's transparency and being able to understand how decisions are being made. It's fairness so that we're not introducing bias. And there is an example every few days of a new example of AI that's introduced some sort of biased outcome, gender bias or racial bias or something, that's entirely avoidable if you apply AI in the right way. And it's by following the right disciplines, using some of the toolsets and toolkits we've developed that you can avoid that. And then honesty is a principle. It sounds weird to put honesty to a set of principles, but people have used AI to to break laws. You can easily design a self-driving car that can break the speed limit by knowing where the police are. So, anyway, those principles are really important because I talked earlier about the power of AI for good. But AI, like any technology, AI's neutral. It's how we use it that will dictate the impact, and by using these principles of responsible AI, which we take very seriously, we're training our people, we're training our teams, we're developing tools and methodologies around this because that's how we can make sure it has the right outcomes for our clients and the right outcomes more broadly for the communities, the societies, the citizens that we operate in. -And it starts then, I think, we talked about with trust, right? So the more responsible AI you have, people begin to trust it and understand it and that concept of explainable AI. If you can explain the outcomes and how we got there, people start to feel more comfortable with it. -Now trust is huge. Thank you for bringing that up. Trust is one of the biggest words, and I would say trust is the ultimate currency in the age of AI that we're moving to. And you mentioned an important thing, explainability, and I was talking to Rumman Chowdhury, who's our leader in responsible AI, and she told me a really insightful thing. It's not just about explainability, it's about understandability because there're some AI techniques that you can't explain because of the science of how deep learning works. But you need to be able to understand the impact they're having.

And that distinction of being able to understand what's happening is a real important distinction that we're focused on as well. -Great, well, a lot more to come.

## Key Takeaways

We could probably talk about this for many more hours, but I think we're going to segue into one last question. And I'd really like to know from each of our experts today, what is one key takeaway that you would want everyone to kind of walk away from this as they think about AI? So Athina and Laeticia, we'll start with you. What's one key takeaway you have for our audience? -For us in Accenture and for applied intelligence, AI gives the ability to our clients to scale. It's not about experimentation. It's not about creating nice points of views and proof of concepts. It's allowing the business to reach new frontiers, to reach new outcomes by bringing the scale that only AI can give to them. And it's beyond technology. It's about business information. -For me, with my conversational AI at home, the key takeaway for me is systems are becoming more radically human. I actually love this particular part of our vision. We are going to start interacting with machines in a very different way, and we won't have to learn as much as we used to, and they will have to learn. So really embracing that new way of interacting with systems and making systems more accessible to all of us. Before, you needed to learn or take courses to learn tools or learn how to code and all of that kind of thing. All of those things could actually go away and democratize, if you want, IT or systems for the broader use. So really embrace that shift, that paradigm shift. -I love it. I love it. Shail, what about you? -So it's clear that AI is here to stay, and it's making a huge impact. But AI is only as good as the data that it's trained on. So our advice to clients is to be strategic about it, to make sure that you have data that is self-serve so you can democratize the power of AI, and also data that can be trusted. And if you trust the data, you can actually engender trust in your business community as well, to Paul's point, and trust is the currency of the future as well. -So we all need to be data citizens, I think. -You got it. -All right. Paul, one key takeaway. -My key takeaway would be learn because every time, even in this discussion, you listen to everybody, and you learn a little bit. AI's a rapidly advancing field. The patents we have, we're developing new patents every week because there're new advances in the field. Researchers are generating all sorts of new advances. And we're still learning. We talked a lot about the impacts on businesses and people, but we're still learning about it. This is the early, it's been around 60+ years, it's still the early days of us understanding how this technology transforms the way we work and live. And we need to learn more about AI, that's why I love this TQ topic, and really just think and learn more, each of us as an individual, and study the impacts that this is going to have so that we're updating our point of view continuously. -Okay, great. Well, learners, what about you? Any last questions before we wrap? -Well, that brings up a good point. I was going to ask where can we learn even more? -Yeah, that's a great question. Where can we learn more about AI, and we have a good answer. We've got the TQ home page. So we've got client stories out there. We have a Go Deeper section. So there're more courses, and you can take courses on data science, machine learning, deep learning, and it has links to the AI portal. So make sure you check that out. -What's the best way to stay current on the latest developments with AI. -That's a great question. Shail, how do you stay current? Like Paul said, everything's changing. What's your way that you stay

current and know what's happening? I follow Paul's Twitter account. I think there is a great set of resources within Accenture to learn from. We have, for example, a data university where we have over 3000 courses that are available. So that is one thing. But there is, the social media, the internet is the best thing to do. And become part of a community of practice. There's a lot of community of practice with Accenture as well. So become part of that community, and there's a lot of shareability that exists there. -Okay, great. Athina and Laetitia, what would you say? How do you stay current on all of this technology in this area that's changing constantly. -Well, coming from academia, I have to keep up to date because my students will challenge me whenever I teach part time. But also we have 3000 data scientists and 6000 AI engineers in applied intelligence, which are always up to date. So you have to keep reading. You have to listen to the young generation who are hungry for knowledge, and they will always challenge you if you're not up to date. So I'm learning through my teams. I'm learning through academia and learning from the colleagues. -And for me, I think there's nothing better than going out there and speaking with some of your clients, understand some of the challenges I'm trying to solve and really pull every resource you can. But I also force myself to get out there on the market, speak about AI and what our point of view is, not be shy, have those conversations with some of those leaders. I do follow a couple of institutes like AI Now in the U.S. He is doing amazing work on responsible AI. The Center for Human Research. I'm following some of the key kind of trends quite carefully. But I think just be out there, and when there's something you don't know, really kind of try to kind of dig deep in it and see if you have a point of view and shape it and start formulating it to actually shape a point of your vision, and push it out so you get feedback and you continuously improve it. -Yeah, I love it, both really great ideas. So, Paul, besides reading your book, what else do you do to kind of stay up on the latest? -I just reread it every week. -Yeah, I know. -I like to play around with technology, so I program and play around with some of the machine learning frameworks and such, which is a great way to experiment. So there're actually some very simple ways to do it. It sounds like, Well, I'm never going to go do that, for a lot of people listening, but we developed a module for Hour of Code last year that's on machine learning. And it's oriented---and I forget how many, tens of thousands of children use that module to learn more about it. It's a very simple approach to learn about machine learning. And if you do it, and you see how it works, it really reinforces the concepts. So I'd say get hands-on and do it where you can. You can go to code.org and access resources there. We'll put those out on TQ as well. And then everything everybody else said. There's so much happening and so much written about it. There're lots of resources to learn from. I find my best learning experiences are going out and talking to our teams who are applying it and understanding what they're doing, why they're doing it, and what they learn from their recent experiences at our client, and that's the best learning source. -Great, yeah, talking to each other. We've got obviously amazing experts in Accenture. Thank you to all of the guests today. We learned a lot today. There's a lot more to learn, so make sure that you're out there on the TQ home page, and continue learning. And we'll see you next time from the TQ HQ.



## What Is AI?

What is AI? Simply put, artificial intelligence is the process of enabling machines to make human-like decisions. To do this, AI needs a way to observe or sense the world. So it takes in data, such as images, sounds, speech, and text. Now, with this new data, the machine can comprehend information by collecting and matching patterns. Finally, it can take an action based on its own understanding of that information. The AI will continue to learn through failure and success of these actions, and ideally, become more intelligent. This is an example of weak AI, which means it's limited to one specialized task, like chess. Don't misunderstand; weak can still be powerful, but all of that powerful intelligence can't be transferred to, say, a game of Tic-Tac-Toe. Today's AI is limited to specialized tasks like this, but the AI of the future would be strong AI. This is a machine that could transfer what it learns from one task to another, giving it the ability to think more like a human. Artificial intelligence; built to learn. You're excited to build a new bookcase. It comes with directions, so this should be a piece of cake, right? Well, it turns out the directions are for a Lego set. It does not end well. This is because you were given bad data, and bad data will result in bad decisions. This is no different for artificial intelligence. Successful AI depends on the accuracy and quantity of data. Data will either be structured or unstructured. Structured data is data from sensors or financial records and includes lots of organized numbers and groups of words. Unstructured data is data like email, documents, or web pages, and non-textual data, like audio, video, or photos. The data is not organized, but advanced analytics allow machines to understand huge volumes of information. Unstructured data can be labeled with metadata. This is a way for humans to teach machines the algorithm for what good means. Unstructured data can also have dark data. This is data not typically used and often not even stored. It can include data from company network devices, system logs, and mobile GPS. It can be used to find valuable customer and business insights. Artificial intelligence; powered by quality data. Have you ever received an accurate product recommendation online? This is artificial intelligence getting better at identifying data with little or no set rules. Have you noticed social networking sites accurately identifying and tagging photos of you? AI uses algorithms to mimic human vision by processing a whole lot of visual data. Have you talked with Alexa or Siri? AI can use natural language processing to listen and converse with people. Ever use a website's chatbot to get quick answers? It links to natural language generation, which reads data and creates a response in text or speech. Next time you're using adaptive cruise control or any self-driving feature, know that this is intelligent automation. This AI solution enables programs and machines to learn and adapt to driving conditions. Artificial intelligence; working hard in our everyday lives.

## What Does AI Do?

What does AI do? Artificial intelligence enhances our lives personally and professionally by helping us be better at what we do and how we do it. Streaming services give you recommendations. Your robot vacuum learns the less tidy areas of your home and cleans in those places more often. Reporters use digital assistance to help them with real-time suggestions from past stories and external suggestions as they write. AI-enabled technology helps doctors recognize malignant patterns in a cancer scan. But AI is proving to not only be helpful, but

revolutionary. Autonomous electric vehicles will completely upend our transportation system. Healthcare AI models will predict which patients are likely to have strokes or heart attacks within 10 years. Financial institutions will use AI to detect emerging fraud immediately, and more manufacturing companies will use AI to increase efficiency and prevent downtime. Artificial intelligence; machines making an impact.

## Why Does AI Matter?

Why does AI matter? The number one reason most businesses use artificial intelligence is to increase task efficiency, which can greatly reduce costs. But believe it or not, cost reduction only accounts for a fraction of the benefits. Here are four reasons why AI matters. One, working smarter and more effectively. As AI tackles the lower level repetitive work, people are freed up for higher level tasks that are more fulfilling and fuel business growth. Two, improved accuracy and better decision making. Automation brings new levels of consistency, speed, and scalability to business production. Three, better human experience through enhanced interaction. Technology, such as personalized chatbots, creates superior experiences for people through more personalized and efficient conversations. Four, invention of new intelligent products and services. AI supports agility and rapid experimentation, helping you discover new products and services with the speed and excellence that wasn't achievable before. Artificial intelligence, the future of business growth.

## How Is AI Applied?

How is AI applied? A business can choose to implement artificial intelligence in three different ways. They can build their own custom solution, they can buy pre-constructed building blocks of a solution, or they can partner with other businesses that have already built the relevant capabilities. Businesses often choose to build a custom solution, believing it gives them more control. But really, choosing a partner with experience and existing resources allows for greater agility and faster experimentation at a lower cost. No matter which path to AI a business chooses, it can lead to applications that are surprisingly powerful. That power brings with it a need to design and apply AI responsibly. We do this in four ways. AI governance framework should be designed so that everyone in the company is aware of your organization's core values. Your designs need to account for privacy, security, and transparency in their decision-making rationale. Performance of AI systems must be closely monitored to ensure full accountability, prevent any bias, and maintain cybersecurity. People need to be educated on how to interact with, train, and augment AI systems, along with upscaling and elevating them to more rewarding roles. Artificial intelligence; for empowering people.

## How Does AI Work?

Artificial intelligence is machine learning powered by high quality data. You start with an algorithm and feed it data, lots and lots of data. The algorithm analyzes the data and teaches an AI model what to do with it. The AI model adapts, recognizing and analyzes any data it gets in the future based on this training. Three types of



learning algorithms are used to train an AI model. A supervised learning algorithm takes a label dataset, let's say cat images, and learns how to recognize a cat. Using what it learned about cats, it can spot one in other pictures. An unsupervised learning algorithm takes an unlabeled dataset, say, unlabeled images of cats and dogs, and sorts the images with similar characteristics into groups without knowing that one group is cats and the other is dogs. A reinforcement learning algorithm works by trial and error using a feedback loop of positive and negative reinforcement. It's like teaching your dog to do tricks. If your pet performs a trick successfully, he's rewarded with a treat. Unsuccessful tricks are not rewarded. The algorithm builds a set of successful tricks and another of unsuccessful tricks. No matter what type of algorithm is used to train AI, quality data is the key to successful AI solution outcomes. Artificial intelligence; machine learning algorithms.

## What Is Accenture's Role with AI?

Applied intelligence is the name that we at Accenture have given to our unique approach to packaging artificial intelligence and how to generate real impact and big outcomes with it. Our deep industry expertise is then combined with advanced analytics, automation, and AI services powered by data to help our customers to transform their businesses with new agility from front office to back office. And it's not just about telling a computer what to do. It's a computer generating insights, learning from the environment around it, and improving performance over time. Sense, comprehend, act, and learn. Human plus machine: smarter tech, smarter systems paired with people to make people more effective. The Accenture difference is that we plug our unique capabilities and tools into integrated solutions powered by our partners. We use our deep industry and functional experience to provide an unbeatable offering that transforms our customer's businesses.

## How Does AI Combine with Other Technologies?

How does AI combine with other technologies? Businesses can redesign the future by combining artificial intelligence with powerful technologies. AI and Cloud; Cloud gives AI virtually unlimited processing power and the storage capacity to house the huge datasets needed to support machine learning. AI and automation; robotic process automation, or RPA, uses a computer to execute simple, repetitive tasks. AI enables intelligent RPA, allowing the computers to do more complex tasks and expand their range of use. AI and the Internet of Things; IoT networks collect vast amounts of data as people use their devices. This is a great opportunity to incorporate AI and machine learning to analyze that data for insights. AI and blockchain; when used together, AI and blockchain allow organizations to find significant amounts of trapped value by securely accessing shared, tamper-proof data. AI and analytics; analytics works closely with AI to discover new, powerful business insights and previously unexamined data. Machine learning lets us analyze more data at higher levels to give us predictive insights at a speed, scale, and depth that was impossible before. Artificial intelligence is expanding insight exponentially.



# TQ AI Wrap Up

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I hope you all enjoyed learning more about artificial intelligence. I highly recommend that you take this learning a step further and keep it going, engage with your teams, your peers, your leads, clients, and others about artificial intelligence. Now I hope you understand why this is so important and why AI is being hailed, by us and in the marketplace, as possibly the single biggest technology revolution the world has ever seen. And I hope you also understand the key role that data plays, and most importantly, why this is so pivotal and so important to us at Accenture in the work we're doing and doing for our clients. If you're looking for even more learning on AI, visit the Go Deeper section and make sure you tune in again for our next topic. Until then, happy learning.

Course author



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Course info

Level	Beginner
Rating	★★★★☆ (2148)
My rating	★★★★★
Duration	1h 54m
Updated	23 Mar 2020



