



# 7 leading machine learning use cases

How today's businesses are using machine learning to achieve fast, efficient, and measurable results



## INTRODUCTION

# Solve your most common business challenges with machine learning

Machine learning (ML) has moved beyond the hype to become a meaningful driver of value for many organizations. Over two-thirds of businesses that have fully embraced artificial intelligence (AI) say the technology has created a better customer experience, and more than half say it has improved decision-making, increased productivity, and allowed for innovation while achieving cost savings.<sup>1</sup>

While it's clear that ML is an essential part of business transformation, many organizations struggle to understand where to apply ML for the most impact. Selecting the right ML use case requires you to consider a number of factors.

First, you need to find a balance between optimal business value and speed. A proof of concept built by a siloed data scientist is not likely to generate much enthusiasm for ML in an organization. What is more apt to attract the needed commitment and funding is showing how ML can address the practical issues your organization currently faces. Furthermore, you'll want to find something that can be accomplished in 6–8 months so that you won't lose momentum. This is especially true if this is your first foray into ML.

Second, you'll want to find a use case that is rich in data that you already have. A good business use case with no data will lead to frustrated data scientists.

Lastly, you'll want to evaluate whether your business problem actually requires ML for success and whether ML will result in better outcomes than your traditional approach. These outcomes might be realized as cost reduction, increased employee productivity, or an improved experience for your customers.

The best way to satisfy all these criteria is to ensure that technical experts and domain experts are working hand in hand on your ML project. Technical experts can conduct feasibility assessments, and domain experts will ensure the solution is solving a real business problem and will have a real impact.

# Starting with the right use case is key to organizational buy-in

In this eBook, we have outlined seven use cases in which Amazon Web Services (AWS) customers have successfully applied ML. These use cases can strengthen your business case for wider adoption of ML, and you can apply them to kick-start your ML journey or add them to your current strategy.

What makes a good ML use case?

- Solves a real problem for your business—one that's important enough to get attention, support, and adoption
- Increases performance, reduces costs, or improves your customer experience
- Includes technical experts to conduct feasibility assessments and domain experts to ensure the solution will be used
- Can be completed in 6–8 months

When you are ready to deploy your use case, you have the choice of using one or more fully managed **AWS AI services** to quickly get started and integrate intelligence into your applications. Or, if you want to develop your own models, you can use **Amazon SageMaker**—a solution that provides you with all the ML tools you'll need in a single service.

## 7 leading use cases:

- 1 Improve employee productivity ›
- 2 Automate document data extraction and analysis ›
- 3 Add AI to any contact center ›
- 4 Improve customer self-service experience ›
- 5 Personalize customer recommendations ›
- 6 Automate content moderation ›
- 7 Validate user identity ›

# 1. Improve employee productivity by quickly and easily finding accurate information

Employees who have fast, easy access to accurate data are more productive. In a 2019 study by the *Economist*, executives identified “ease of access to information required to get work done” as the number one way in which technology can drive employee engagement and productivity.<sup>2</sup>

Your employees can search for the information they need by asking natural language questions through **Amazon Kendra**—a highly accurate intelligent search service powered by ML. This is much faster and more efficient than traditional keyword search, and the service is easy to deploy for businesses of all sizes. The resulting boost in productivity helps accelerate research while improving decision-making—and can strengthen your business case for wider ML adoption.

[Learn more >](#)



<sup>2</sup> “The Experience of Work,” *The Economist*, 2019

IDEAL FOR ALL INDUSTRIES

GILEAD SCIENCES, INC.

**“Amazon Kendra is a turnkey AI solution that, when configured correctly, is capable of spanning every single domain in the organization while being straightforward to implement.”**

Jeremy Zhang, Head of Advanced Analytics

BAKER TILLY DIGITAL

**“Amazon Kendra allows product managers to ask questions in everyday language such as ‘What parts are made of titanium?’, quickly surfacing an answer previously not possible with keyword search and connecting them to relevant content across an enterprise-wide repository, or providing marketing managers quick access to crucial research on customer behavior.”**

Ollie East, Director of Advanced Analytics & Data Engineering  
Tom Puch, Sr. Manager

## 2. Make faster decisions by automatically extracting and analyzing data from documents

The millions of documents created by your organization contain a treasure trove of insights waiting to be leveraged. Unfortunately, manually processing the ever-growing volumes of data to make them easy to access and search is a cumbersome, costly task. Using ML, your organization can gain timely access to the information contained in your documents, leading to new insights that inform your business decisions.

For organizations looking to activate intelligent document processing today, AWS offers three services that can be deployed individually or combined as building blocks to develop an end-to-end document processing solution.

**Amazon Textract** automatically extracts handwriting, printed text, and data from scanned documents. **Amazon Comprehend** is a natural language processing (NLP) service that uses ML to find insights and relationships in text. And **Amazon Augmented AI (Amazon A2I)** provides built-in human review workflows to help ensure the accuracy of the data.

You can also quickly and efficiently develop your own ML models for text extraction and analysis with **SageMaker**, a fully managed service that helps business analysts, data scientists, data engineers, and MLOps engineers prepare data and build, train, and deploy ML models quickly. This service provides several built-in ML algorithms—such as BlazingText and Linear Learner—that are optimized for text classification, NLP, and optical character recognition (OCR).

[Learn more >](#)



### IDEAL FOR

Financial Services, Healthcare and Life Sciences, Accounting, Education, Government, Legal, Oil and Gas

### ASSENT COMPLIANCE

**“Amazon Textract’s OCR technology enabled us to process...documents while Amazon Comprehend was able to extract custom entities. [Using] Amazon Augmented AI, we were able to have our teams review documents in a given accuracy range and help train our next model iteration. Combining these services...[saved] our customers hundreds of hours in manually reviewing documents.”**

Corey Peters, AI/ML Team Lead

### THOMSON REUTERS

**“Our solution required several iterations of deep learning configurations at scale. Amazon SageMaker enabled us to design a natural language processing capability in the context of a question answering application...successfully allowing [our customers] to simplify and derive more value from their work.”**

Dr. Khalid Al-Kofahi, VP of Research & Development



### 3. Add AI to any contact center to improve service and reduce costs

Improving the customer service experience is one of the best ways to differentiate your brand—and demonstrate the value of ML. Successful organizations treat their customer contact center as a business-critical asset rather than viewing it solely as a cost center.

ML can help transform a contact center into a profit center by reducing call wait times, improving agent productivity and satisfaction, lowering costs, and helping to identify business improvement opportunities.

AWS offers several flexible options to add intelligence to your contact center. If you are looking for an end-to-end solution, **Amazon Connect** is an easy-to-use omnichannel cloud contact center that helps companies deliver superior customer service at a lower cost.

If you already have a contact center in place, **AWS Contact Center Intelligence (CCI)** solutions empower you to improve customer experience, boost agent productivity, and gain conversation insights by adding AI capabilities to the contact center of your choice—without any ML expertise. AWS CCI solutions integrate with most leading contact center platforms like Genesys, Cisco, Avaya, Amazon Connect, Mitel, Talkdesk, and many more.

AWS CCI solutions use a combination of AWS AI services to provide self-service virtual agents, real-time call analytics and agent assist, and post-call analytics.

[Learn more >](#)



#### IDEAL FOR ALL INDUSTRIES

##### VANGUARD

**“At Vanguard, we aim to build state-of-the-art experiences for our clients. AWS CCI’s self-service solution enables us to rapidly iterate and think about the client experience from a different lens. This allows us to continue improving call routing accuracy, improve the odds of first call resolution, and deliver value for our clients and business.”**

Nicki Larro, Retail Contact Center Technology Product Owner

##### MAGELLAN HEALTH

**“We chose Amazon Kendra, a service within AWS CCI to build a secure and scalable agent assist application. This helped call center agents, and the customer they serve to quickly uncover the information they need. Since implementing CCI...[solutions], early results show an average reduction in call times of about 9–15 seconds, which saves more than 4.4k hours on over 2.2 million calls per calendar year.”**

Brian Lichtle, Sr. Director of Software Engineering

## 4. Improve customer self-service experience with conversational AI

Conversational AI (CAI) interfaces add human-like conversation capabilities to your business applications by combining different natural language technologies like NLP, natural language understanding (NLU), and natural language generation (NLG). The demand for self-service conversational interfaces continues to grow as more and more users prefer to interact with businesses on digital channels. Organizations of all sizes are developing voice and text conversational interfaces to increase user satisfaction, reduce operational costs, and streamline business processes.

CAI interfaces are used broadly across a wide variety of industry segments and use cases. The common use cases for CAI include 1) Building virtual agents and voice assistants, 2) Automating informational responses and data capture, 3) Boosting agent productivity in contact centers, 4) Automating customer service, and 5) Performing transactional operations.

CAI solutions primarily leverage **Amazon Lex**, which is complemented by additional AI and ML services, including Amazon Kendra, Amazon Comprehend, Amazon Translate, Amazon Polly, and SageMaker. Amazon Transcribe combined with Amazon Lex provides the advanced deep learning functionalities of automatic speech recognition (ASR) and NLU to enable customers to build applications with highly engaging user experiences and lifelike conversational interactions using voice and text. With Amazon Lex, the same deep learning technologies that power Amazon Alexa are now available to any customer, enabling them to build sophisticated natural language conversational bots quickly and easily.

[Learn more >](#)



IDEAL FOR ALL INDUSTRIES

### RYANAIR

**“Ryanair’s chatbot powered by AWS conversational AI services has become an extension of the customer care team, handling over 3 million conversations across five languages every year.”**

Lee Reddin, Head of Service Design

### XPERTAL

**“Xpertal improved contact center efficiency, omnichannel support across email, phone, collaboration tools, and internal corporate websites. With Amazon Lex’s easy to use interface, our Contact Center team was able to create bots after a 1-hour training session. The solution was easy to integrate with business applications to create a virtual help desk that enables employees to find answers faster. Top benefits include improved call deflection rates, reduced call wait times, and increased agent productivity.”**

Chester Perez, Contact Center Manager

## 5. Deliver personalized recommendations to increase customer engagement

Consumers today expect real-time, personalized experiences across digital channels as they consider, purchase, and use products and services.

ML can help you deliver these highly personalized experiences, resulting in improvements in customer engagement, conversion, revenue, and margin. AWS offers ML solutions that deliver higher-quality personalized experiences across digital channels—all tailored to your business needs.

To get started quickly with personalization today, you can use **Amazon Personalize**—a fully managed service that leverages more than 20 years of personalization experience at Amazon. Amazon Personalize makes it simple to develop applications for a wide array of personalization use cases, including product or content recommendations, individualized search results, and customized marketing communications—with no ML expertise required.

Or, if you want to develop your own ML models for recommendation engines, you can use SageMaker—a fully managed service that helps ML practitioners, including business analysts, data scientists, data engineers, and MLOps engineers, prepare data and build, train, and deploy ML models quickly. You can use built-in algorithms, such as factorization machines or XGBoost, both of which are optimized for personalization, to readily train and deploy models. You can also bring your own algorithms and models or select from the hundreds of algorithms and pretrained models available in **Amazon SageMaker JumpStart**.

[Learn more ›](#)



### IDEAL FOR

Retail, Media and Entertainment, Travel and Hospitality, Education, Financial Services, Government, Healthcare, Software and Internet

### WARNER BROS. DISCOVERY

**“With Amazon Personalize we were able to build and train a real-time recommendation engine POC within two days. Since deployment on our TBS, TNT, TruTV and Adult Swim web properties, over 25k unique consumers have clicked on cross-portfolio promotions for the movies, shows and site sections recommended by Amazon Personalize. For the users receiving personalized promotions we have seen total user engagement increase by 14% and cross brand engagement increase by 12% compared to a randomized control group.”**

Don Browning, VP Cloud Architecture

### GEVME

**“AWS had all the tools we needed to create next-generation virtual event software and networking opportunities.”**

Veemal Gungadin, Founder & CEO



## 6. Automate content moderation with AI to protect users, brands, and information

Eighty percent of all web content today is user-generated content (UGC). Seventy percent of consumers agree that brands are responsible for moderating UGC, and 40 percent disengage with brands after a single toxic content exposure.<sup>3</sup> As the volume, complexity, and speed of UGC increase, organizations of all sizes must commit significant technical and human resources to ensure customers are not harmed by offensive material and that sensitive information is not exposed publicly, all while keeping operational costs down. Human-based content moderation alone cannot scale, leading to poor user experience, high moderation costs, and brand risk.

AI and ML can help organizations automate content moderation to reduce human workloads. AWS has fully managed yet customizable AI solutions and services that can help you automate how you protect your customers, online communities, and brands while lowering moderation costs.

**Amazon Rekognition** helps you streamline or automate image and video moderation workflows to detect inappropriate or offensive content and unwanted brand associations. **Amazon Transcribe** enables you to convert speech to text, check it against banned words, and detect harmful audio-focused content. **Amazon Translate** helps moderate text content across languages, from social media comments, reviews, and documents to in-game chats and instant messages. **Amazon Comprehend** increases your investment's value with contextual insights and protects sensitive personal and health information, and **Amazon Augmented AI** brings human moderators in the loop to verify decisions and improve the ML model over time.

[Learn more >](#)



<sup>3</sup> "Survey: Nearly Half of Americans Quickly Lose Trust in a Brand If Exposed to Toxic or Fake User-Generated Content on Its Channels," Business Wire, 2021

### IDEAL FOR

Social Media, Gaming, Ecommerce, Advertising, Financial Services, Healthcare, and Education

### DREAM11

**"AWS promotes a user-first culture, with intuitive cloud-native services that help us launch things fast without any dependencies, develop and make our prototypes live very quickly, even at a massive scale. This gives us a competitive edge in the market, where speed is essential."**

Praveen Jain, VP of Engineering

### COSTAR GROUP

**"Amazon Rekognition's Content Moderation API enabled us to easily build a solution to automatically analyze all uploaded images, allowing us to efficiently deliver high-value products and improve our product offerings by making the images we receive more discoverable and our community more inclusive."**

Mark Osborn, Principal Software Engineer

## 7. Validate user identity to protect users and prevent fraud

The fraud detection and prevention market is expected to grow to \$75 billion USD by 2028 at a 16 percent CAGR<sup>4</sup> in an increasingly digital world where organizations have to invest billions of dollars to reduce and prevent fraud. While identity verification can be used to prevent fraud, correctly identifying user identity in real time is technically complex and resource-consuming and can add friction to the customer experience.

Verifying identity to combat fraudulent activities makes for a good AI and ML use case for three primary reasons. First, ready-to-use AI solutions, services, and ML models enable developers to quickly deploy identity verification processes. Second, fully managed APIs can help train and implement custom models with less effort and data. Third, customers can leverage existing development resources with solutions and services that require no previous expertise, making AI and ML readily available across the organization at a lower cost.

**Amazon Rekognition Identity Verification** offers pretrained facial recognition and analysis capabilities that organizations can quickly integrate to authenticate their users' identities. Through a streamlined verification process and the ability to detect fraudulent and duplicate accounts in seconds, onboarding legitimate customers becomes simple without affecting your customer experience. Leveraging automation and AI with ready-to-use services, your organization can effectively reduce implementation and operational costs.

[Learn more >](#)



<sup>4</sup> "Fraud Detection and Prevention Market Size Worth \$75,139.66 Million, Globally, by 2028 at 16% CAGR - Exclusive Report by The," Bloomberg, 2022

### IDEAL FOR

Finance, Education, Ecommerce, Retail, Gig Economy

### INTER

**"Three years ago, we opened 200 accounts a day. Today there are 29,000 accounts opened daily, and we would not have the agility to do this without Amazon Rekognition."**

Bruno Picchioni, Squad Lead, Credit Platform

### AELLA CREDIT

**"Using Amazon Rekognition for identity verification on our mobile application has reduced verification errors significantly and given us the ability to scale. We can now detect and verify an individual's identity in real time without any human intervention, thereby allowing faster access to our products. We tried various well-advertised solutions, but none of the popular alternatives could accurately map out various skin tones. Amazon Rekognition helped us effectively recognize faces of our customers in our markets. It also helped us with KYC in discovering overlapping profiles and duplicate datasets."**

Wale Akanbi, CTO & Co-Founder

# Start or expand your machine learning journey now

With the use cases in this eBook, you can leverage ML to boost productivity, make smarter use of your data, meet customer demands more effectively and efficiently, enhance customer experience and satisfaction, make better decisions faster, and reduce the frequency and impact of fraud.

We chose to highlight these seven use cases because our customers are achieving impactful, measurable results with them today—and because they fulfill the requirements you should look for when identifying a suitable application for ML. These use cases can be completed in a matter of months, solve real business problems, increase performance, reduce costs, and improve the customer experience. They lend themselves to the inclusion of technical and domain experts and—when properly executed—generate results that gain attention and foster executive support for wider ML adoption.

The business potential of ML goes far beyond these seven use cases. With the broadest and deepest set of AI and ML services and tools available today, AWS can help you apply ML in a wide variety of ways that can transform your business—allowing you to push innovation to new heights and reimagine the possibilities of what your organization can achieve.

[Learn more about AWS AI use cases ›](#)

