aws FOR FINANCIAL SERVICES

Power your financial services transformation

With AI, ML, and generative AI on AWS

Table of contents

Introduction 3

The next generation: Generative AI 4

AI and ML is essential for a competitive edge 6

Use cases: Overview 7

- Customer experience and onboarding 8
- Personalization 9
- Document processing and text analytics 10
- Predictive analytics 11
- Fraud detection and prevention 12

Get started 13

Introduction

The next generation: Generative AI

AI and ML is essential for a competitive edge

Use cases: Overview

Use case: Customer experience and onboarding

Use case: Personalization

Use case: Document processing and text analytics

Use case: Predictive analytics

Use case: Fraud detection and prevention

Get started

INTRODUCTION

Artificial intelligence and machine learning are everywhere

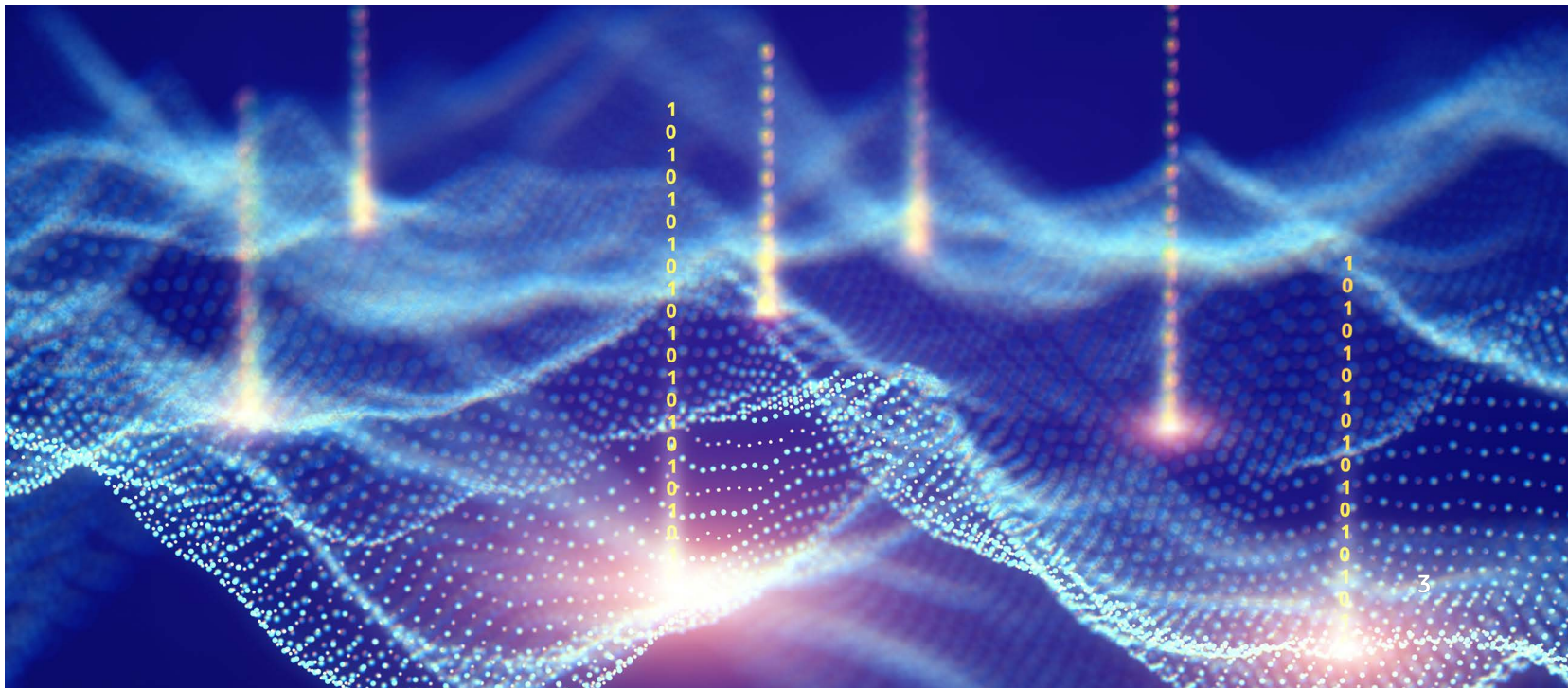
Adoption of artificial intelligence (AI) and machine learning (ML) has achieved critical mass in the financial services industry. At that same time, interest in generative AI is growing rapidly, as are initiatives to explore its application in a growing number use cases.

Today, the use of AI and ML, in all of its forms, continues to accelerate rapidly as institutions of all types realize its power to transform their organizations faster and in ways never before possible. A recent Economist Intelligence Unit study found that 85 percent of banking IT leaders have a clear strategy for using AI in product and service development.[1]

From core system processing to client-facing applications, AI and ML power applications across financial services to increase efficiency, enhance analytics, and automate and personalize experiences.

With the mission to put AI, ML, and generative AI in the hands of every developer, Amazon Web Services (AWS) provides the broadest and deepest set of AI and ML services for financial services institutions of all sizes, and for developers across expertise levels, to help accelerate their journey.

1 The Economist Intelligence Unit Limited, Banking on a game-changer: AI in financial services, 2022.



Introduction

The next generation: Generative AI

AI and ML is essential for a competitive edge

Use cases: Overview

Use case: Customer experience and onboarding

Use case: Personalization

Use case: Document processing and text analytics

Use case: Predictive analytics

Use case: Fraud detection and prevention

Get started

The next generation: Generative AI

Generative AI represents the next evolution in AI with the ability to automatically create diverse types of content such as text, images, audio, and synthetic data.

Early generative AI use cases in financial services focused on streamlining and enhancing elements of the value chain where AI had already demonstrated clear value. With large language models (LLMs) rapidly evolving—and confidence in AI growing—the industry is beginning to explore broader adoption.

Financial services institutions are now looking to move beyond early exploration with generative AI and are setting their sights on using the technology to achieve its full potential in the form of measurable business results.

AWS sees three use cases that are gaining significant traction.

Fighting financial crime. Nasdaq estimates that $3.1 trillion in illicit funds flowed through the global financial system in 2023.[2] As financial crime continues to grow in volume and complexity, banks and their financial crime investigation teams need to increase the efficiency and accuracy of their investigations. Many are looking to generative AI to help them reduce false positive alerts, boost efficiency through automation, and empower financial crime investigators and compliance analysts to handle growing workloads and increasingly complex investigations.

genpact

Genpact integrates its financial crimesoftware with Amazon Bedrock will allow its analysts to focus more time on identifying fraud and spend 60 percent less time on case summarization.[3]

Achieving hyper-personalization for customer experience. Research suggests that most customers would be willing to buy more from their primary bank if they received more personalized offers.[4] Generative AI on AWS enables hyper-personalization at scale, helping financial institutions to improve customer satisfaction and support revenue growth.

NatWest

NatWest uses generative AI on AWS to hyper-personalize its marketing messages and achieve a four-times higher clickthrough rate on messages developed using LLMs.[5]

2 2024 Global Financial Crime Report, Nasdaq, 2024.

3 Genpact Integrates riskCanvas with Amazon Bedrock to Transform Financial Crime Management with Advanced Generative AI Capabilities, Genpact press release, September 28, 2023.

4 The future of retail banking: The hyper-personalisation imperative, Bain & Company, 2021.

5 AWS re:Invent 2023 - How to deliver business value in financial services with generative AI (FSI201), AWS 2023.

Introduction

The next generation: Generative AI

AI and ML is essential for a competitive edge

Use cases: Overview

Use case: Customer experience and onboarding

Use case: Personalization

Use case: Document processing and text analytics

Use case: Predictive analytics

Use case: Fraud detection and prevention

Get started

Democratizing access to data to drive employee productivity. Data is the lifeblood of every modern financial institution and can be used as a powerful competitive edge. Generative AI can help financial institutions democratize access to data and analytics by providing a natural language interface for analysts and business users to produce charts and tables in response to natural language queries. In addition, it can summarize unstructured documents into key points, provide answers to queries within the unique contexts of a business, and surface information buried within or scattered across documents—faster and more accurately than rules-based systems. Generative AI can also save financial services knowledge workers valuable time by accelerating and automating essential tasks, such as processing claims, preparing initial report drafts, and searching multiple databases and systems to find information on a customer or account.

Trustly

Trustly empowers users to self-serve their data using natural language queries rather than relying on technical teams using Amazon Q in QuickSight.[6]

Learn more about how AWS is enabling financial services institutions to leverage generative AI to achieve measurable impact.

Why AWS for generative AI?

Security and privacy from day one
With security and privacy built in, your data remains protected and private when you customize foundation models.

Choose the right model for your use case
Choose from industry leading foundation models from Amazon, AI21 Labs, Anthropic, Cohere, Meta, Mistral AI, and Stability AI in Amazon Bedrock. Customize with your data to build more differentiated, personalized experiences.

Most performant, low cost infrastructure
Optimize costs without compromising agility, performance, or reliability. Choose the right-sized model and reduce costs through techniques like batch processing and small LLM preprocessing.

Easier to get started
Get started faster with purpose-built generative AI services such as Amazon Q and Amazon Bedrock—the easiest way to build generative AI solutions that leverage your data and scale generative AI applications with foundational models.

6 Trustly Generates Insights 4x Faster Using AWS Services, AWS 2023.

Introduction

The next generation: Generative AI

AI and ML is essential for a competitive edge

Use cases: Overview

Use case: Customer experience and onboarding

Use case: Personalization

Use case: Document processing and text analytics

Use case: Predictive analytics

Use case: Fraud detection and prevention

Get started

AI and ML is essential for a competitive edge

Financial institutions are able to invest in AI and ML at scale today because of the availability of cost-effective and easy-to-use AI and ML cloud services. Some examples of how they're incorporating AI and ML into their workflows include the following:



Banks are enhancing their customers' experience through chatbots and customized product recommendations



Capital markets firms are optimizing investment portfolios by mining alternative datasets and improving business operations to overcome expensive, manual, and time-consuming tasks



Insurance companies are assessing risk and offering personalized quotes while streamlining the claims process



Payment companies are improving their fraud prevention algorithms

Introduction

The next generation: Generative AI

AI and ML is essential for a competitive edge

Use cases: Overview

Use case: Customer experience and onboarding

Use case: Personalization

Use case: Document processing and text analytics

Use case: Predictive analytics

Use case: Fraud detection and prevention

Get started

USE CASES

We explore five game-changing use cases for the financial services industry



Customer experience and onboarding
Financial institutions can enhance experiences for new and existing customers. Computer vision helps streamline the customer onboarding process, while chatbots and intelligent contact center platforms using natural language processing (NLP) and speech-to-text analytics improve customer engagement with deeper customer insights.



Predictive analytics
Financial services institutions can use AI and ML to extract insights from their data to better anticipate customer needs, quantify risk, identify new investment signals, and predict changing market sentiment and requirements with advanced predictive analysis.



Personalization
Financial institutions can use AI and ML to create highly personalized offerings and develop products tailored to the specific needs and behaviors of each customer.



Fraud detection and prevention
Financial services institutions can identify patterns of anomalous activity in data while reducing the number of false positive alerts generated by rules-based models.



Document processing and text analytics
Financial services institutions can use AI and ML-enhanced technologies to process, analyze, and extract key information from unstructured text data and documents, making it easier to conduct due diligence, review documents, and perform financial analysis.

Introduction

The next generation: Generative AI

AI and ML is essential for a competitive edge

Use cases: Overview

Use case: Customer experience and onboarding

Use case: Personalization

Use case: Document processing and text analytics

Use case: Predictive analytics

Use case: Fraud detection and prevention

Get started



USE CASE

Customer experience and onboarding

Financial services institutions are leveraging ML in the form of computer vision, optical character recognition (OCR), and NLP to streamline the customer onboarding and Know-Your-Customer (KYC) processes. Firms use these techniques to extract the images and text from government information systems and confirm the identity of that person, all within a few minutes. ML also plays a growing role in delivering richer customer experiences and interactions through call centers, chatbots, and applications like Alexa.

Transforming customer service

Capital One receives thousands of calls from its banking customers every day. It wanted a faster, more personalized and cost-effective way to serve its customers' needs. The bank replaced its call center with Amazon Connect and uses AWS ML services such as Amazon Comprehend, an NLP service, to develop better insights into why customers are calling, what new features they want, how to make calls more efficient, and what new tools its customer service associates need.

Improving customer experience

Insurance provider **esure Group** has transformed its customer experience and increased innovation by building a cloud-native platform on AWS. esure created a flexible, scalable platform that could manage the up to 1 million insurance quotes it creates every day. The platform, running on AWS, also supports advanced data analytics and ML to personalize offerings on pricing and claims, and increase the speed and accuracy of fraud detection. esure also provided new ways for customers to receive assistance with policies and claims, including ML chatbots and sending messages directly to agents, instead of waiting in queues to speak to call center staff.

Introduction

The next generation: Generative AI

AI and ML is essential for a competitive edge

Use cases: Overview

Use case: Customer experience and onboarding

Use case: Personalization

Use case: Document processing and text analytics

Use case: Predictive analytics

Use case: Fraud detection and prevention

Get started

USE CASE

Personalization

Financial services institutions are using ML to provide personalized experiences for individual customers. Instead of segmenting customers with a rules-based approach, ML allows financial services institutions to develop models that deliver unique experiences, including customized lending or insurance products and rates, as well as highly tailored investment portfolios and products.

NatWest

Personalize the customer experience

NatWest Group, one of the largest banks in the United Kingdom, is leveraging ML and data analytics on AWS to engage and personalize messaging for its large customer base of 20 million customers. NatWest Group deployed nearly 100 ML models, using Amazon SageMaker, with the goal of having thousands in the next two years. The impact of its personalized messaging approach has been significant, including saving customers in poorer neighborhoods nearly half a million pounds in ATM fees within six months, reducing fraud, and enhancing overall customer wellbeing.

DBS

Personalized digital marketing

DBS Bank Ltd, a Singaporean multinational banking and financial services company, wanted to deliver a hyper-personalized small- and medium-size business (SMB) digital marketing strategy and needed an architecture focused on security and data tokenization for built-in confidentiality features. DBS built its Advancing DBS with AI (ADA) advanced data analytics platform on AWS. The platform enables data scientists to develop ML models using Amazon SageMaker and SME tokenized data. DBS can identify buyer-seller relationships, external search engine optimization (SEO), and optimize search engine marketing (SEM). These insights help DBS enhance customer engagement, brand management, and product management.

Introduction

The next generation: Generative AI

AI and ML is essential for a competitive edge

Use cases: Overview

Use case: Customer experience and onboarding

Use case: Personalization

Use case: Document processing and text analytics

Use case: Predictive analytics

Use case: Fraud detection and prevention

Get started



USE CASE

Document processing and text analytics

Financial services institutions manage processes that require a large amount of documentation, like loan applications, tax filings, and SEC regulatory findings. These processes are often manual, time-consuming, error-prone, expensive, and not easily scalable. With ML, firms can extract text from millions of documents, understand the sentiment of and relationships between those documents, and include a manual step to validate, correct, or augment the ML results for higher accuracy and compliance.

Credit decisioning in minutes

WeLend is a Hong-Kong based online lender that provides unsecured loans to individuals who may be unable to receive money from traditional banks. WeLend's AI-based credit-decisioning engine, WeDefend, allows the company to analyze numerous data points in seconds to make credit decisions. The algorithm runs on Amazon Elastic Compute Cloud (Amazon EC2), instances, where big data is processed and then stored in Amazon Simple Storage Service (Amazon S3) buckets. WeLend utilizes Amazon's AI tools, such as Amazon Rekognition, to rapidly and accurately identify the category of each document a loan applicant uploads, such as a driver's license or ID card. With AWS solutions, services, and tools, WeLend has gained the scalability it needs to support an 80 percent annual increase in new applications.

Automating complex mortgage document processing

Indecomm developed its Intelligent Document Extraction (IDX) solution to reduce the cost and time spent reviewing mortgage origination documents, resulting in quicker loan turnaround times and higher customer satisfaction. The company set out to develop an ML–powered data extraction solution, which it named Intelligent Document Extraction (IDX). To ensure high levels of accuracy and efficiency in IDX, Indecomm leveraged Amazon Textract to automate complex document review and extract data from images and text for analysis. Clients using IDX can halve the time required for underwriting and mortgage origination, ensuring data accuracy with a predictable, affordable costing model.

Introduction

The next generation: Generative AI

AI and ML is essential for a competitive edge

Use cases: Overview

Use case: Customer experience and onboarding

Use case: Personalization

Use case: Document processing and text analytics

Use case: Predictive analytics

Use case: Fraud detection and prevention

Get started



USE CASE

Predictive analytics

Financial services institutions are using ML for predictive analytics to better anticipate customer demand and associated risk. For example, ML is being used to predict customer account balances to better anticipate customer needs and recommend the appropriate financial products. In capital markets, ML is used in time-series forecasting to predict asset demand (prices) and derivative pricing. It is also being used to develop new products to help broker-dealers and asset managers to better manage their accounts and reduce risk.

MORNINGSTAR®

Faster risk modeling for diverse, multi-asset portfolios

Morningstar, a financial services research firm, wanted to accelerate risk modeling. Its risk model solution for multi-asset portfolios took more than 10 hours to run a single model with a single currency for a single date. Morningstar used Amazon EC2 to gain the scale needed to break up the risk model into a series of microservices and perform predictive analytics for multiple currencies at the global, regional, and local levels. Its platform is now 160 times faster and Morningstar reduced calculation times by approximately 98 percent. As a result, the company expanded from 50,000 assets to more than 5 million and can perform model validation and statistical quantitative analysis not possible with its legacy architecture.

Trumid

Accurate trade prediction

Trumid is a financial technology company bringing efficiency to credit trading through data, technology, and intuitively designed products. Traders on the Trumid platform have a choice of 20,000 bonds to buy or sell, thousands of other traders to interact with, and different trading protocols to choose from. Trumid took advantage of the Amazon Machine Learning Solutions Lab to build an end-to-end data preparation, model training, and inference process. Using Amazon SageMaker and the Deep Graph Library, Trumid developed a customer knowledge graph model that improved modeling performance by 80 percent—significantly improving its ability to predict new trades and better match traders and bonds.

Introduction

The next generation: Generative AI

AI and ML is essential for a competitive edge

Use cases: Overview

Use case: Customer experience and onboarding

Use case: Personalization

Use case: Document processing and text analytics

Use case: Predictive analytics

Use case: Fraud detection and prevention

Get started

USE CASE

Fraud detection and prevention

Financial services institutions want to protect customers by detecting anomalous behavior and suspicious transactions while also minimizing transactions that are blocked when they shouldn't be. Leveraging AWS ML and analytics services, firms across banking, capital markets, insurance, and payments can provide a frictionless customer experience while preventing fraudulent transactions—protecting consumers as well as their own bottom line.

Standard Bank

Improving fraud detection and customer satisfaction

Standard Bank Insurance's funeral claims team had many manual checks in place to ensure that claims were legitimate prior to finalization. These processes slowed the claims process and delayed the release of funds for legitimate claims. The bank wanted to use ML to create a better experience with faster payouts for valid funeral claims. It chose Amazon Fraud Detector for its ease of use, flexibility, and low-code capabilities. In collaboration with AWS, Standard Bank ran a successful proof-of-concept within a few weeks. After launching Amazon Fraud Detector into production, Standard Bank achieved faster payouts and improved its Net Promoter Survey (NPS) scores. It reduced turnaround time for low-risk claims from 48 hours to less than 6 hours. It also saw a 36 percent increase in its NPS scores over the same timeframe.

mastercard

Detecting fraud and reducing false positives

Mastercard uses AI and ML services on AWS to improve fraud detection capabilities globally. The solution has enabled Mastercard to detect three times the amount of fraudulent transactions and reduce false positives tenfold, leading to billions of dollars in merchant savings and providing a better experience for customers around the world.

Introduction

The next generation: Generative AI

AI and ML is essential for a competitive edge

Use cases: Overview

Use case: Customer experience and onboarding

Use case: Personalization

Use case: Document processing and text analytics

Use case: Predictive analytics

Use case: Fraud detection and prevention

Get started

GET STARTED

Accelerate AI and ML skills

AWS provides tools and resources to help customers find success with AI, ML, and generative AI. The following resources were developed over many years of helping organizations adopt this transformative technology.



Training

AWS Machine Learning University

The AWS Machine Learning University (MLU) provides anybody, anywhere with access to the same courses used to train Amazon's own developers on ML. Through a series of engaging YouTube videos taught by Amazon scientists with hands-on practical examples, Jupyter notebooks, and slide decks, MLU provides a comprehensive self-service path to understanding the foundations of ML.



Development

AWS Generative AI Innovation Center

This program pairs you with AWS science and strategy experts with deep experience in AI, ML, and generative AI techniques to help you imagine new applications of generative AI to address your needs. Identify new use cases based on business value. Integrate generative AI into your existing applications and workflows.



Engagement

AWS DeepRacer

AWS DeepRacer provides a fun and interesting way to get started with ML by developing a reinforcement learning model to drive a fully autonomous 1/18th-scale racecar. The AWS DeepRacer event is designed to motivate employees through interactive, friendly competition. With the practical skills, knowledge, and motivation derived from the program, organizations get ready to take their AI and ML journey to the next stage.



Implementation

AWS Partner Network (APN)

AWS Technology and Consulting Partners can help customers evaluate and use AWS tools and best practices to successfully manage and optimize AI and ML applications. APN partners specialize in every stage of the AI and ML lifecycle, from data collection, data prep and parsing, and data visualization to training and evaluating models, tuning parameters, managing models, and deploying, predicting, and integrating models. Customers can also access AI and ML software partners through AWS Marketplace, a digital catalog that makes it easy to find, test, buy, and deploy software that runs on AWS.

Find AWS Financial Services Partners ›

Introduction

The next generation: Generative AI

AI and ML is essential for a competitive edge

Use cases: Overview

Use case: Customer experience and onboarding

Use case: Personalization

Use case: Document processing and text analytics

Use case: Predictive analytics

Use case: Fraud detection and prevention

Get started

GET STARTED

AWS Professional Services

The Professional Services team at AWS helps enterprise customers incorporate AWS services into their overall architecture during their cloud migration journey. They collaborate with customer teams and AWS Partners and share their expertise in the architecture, design, development, and implementation of cloud computing initiatives that result in real business outcomes.

For more information visit AWS Professional Services ›

Helpful resources

Learn about AWS Financial Services ›

Get support to launch your ML journey ›

Explore Generative AI for Financial Services ›

© 2024, Amazon Web Services, Inc. or its affiliates. All rights reserved.