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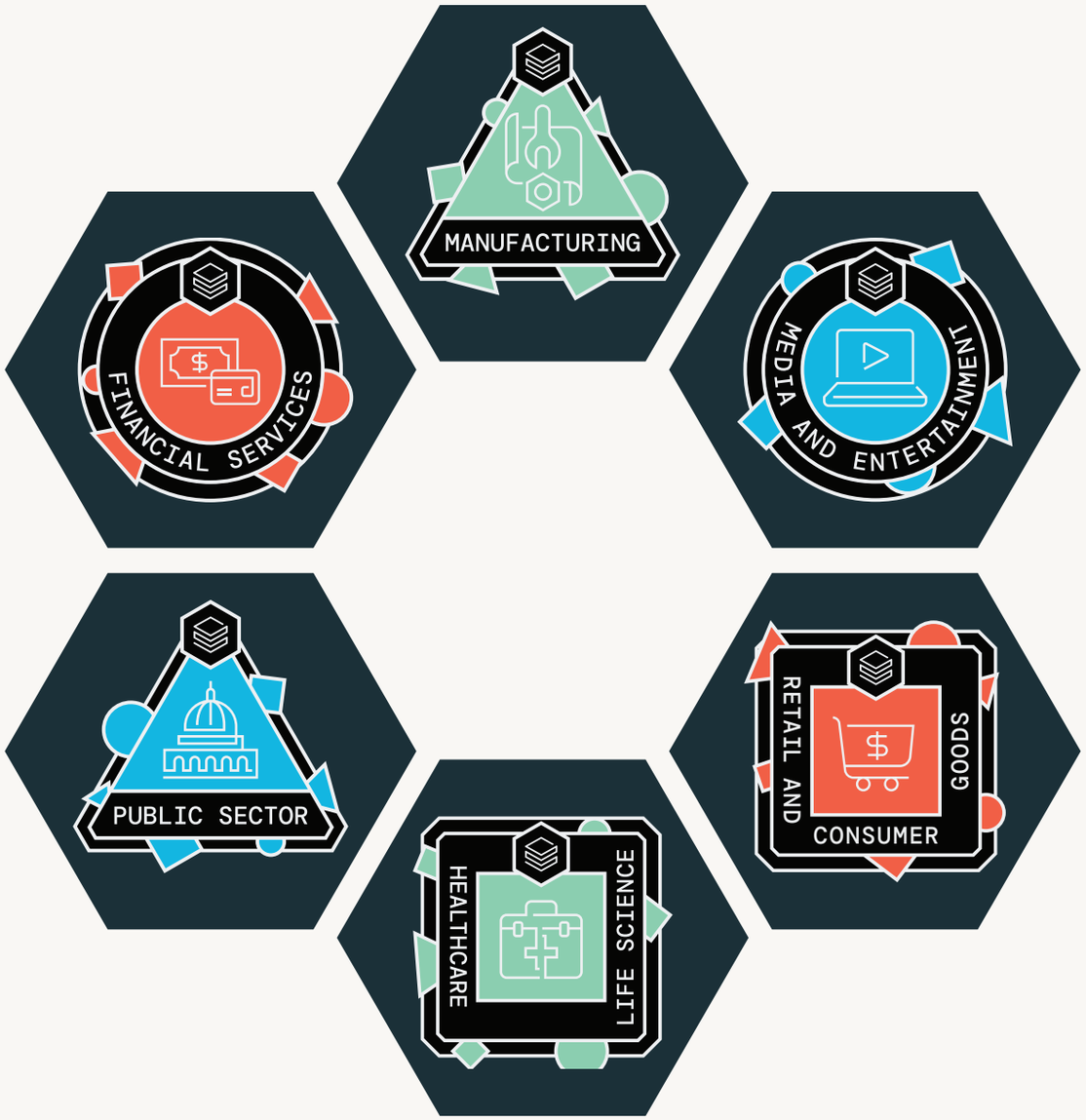
EBOOK

How to Transform Your Industry With Generative AI



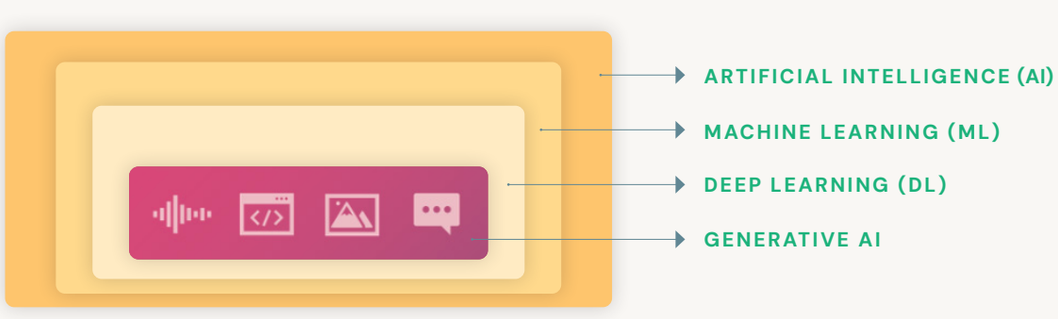
Contents

Generative AI Gaining Momentum Across Enterprises

From optimizing supply chain management to improving customer service and support, the emergence of generative artificial intelligence (AI) has transformed data-driven innovations across industries. Despite budget constraints in many areas of enterprise IT, there is an undeniable paradigm shift taking place as every forward-thinking company is increasing its investment in AI. In a recent joint research study with MIT, we discovered that 88% of executives are investing in generative AI, with more than a quarter already adopting it, and 99% of CIOs and CTOs are optimistic that data and AI investments will yield efficiencies, savings and innovations in the next two years. This resounding commitment to AI investment showcases a strong belief in the potential of generative AI to drive innovation and generate value.

But with all the buzz around generative AI technologies such as OpenAI's GPT-3, Google Bard or MosaicML MPT, how does anyone know where to begin? What is generative AI and how does it apply to my industry?

At the highest level, generative AI is a subset of AI.



- **ARTIFICIAL INTELLIGENCE** uses computer science to create systems capable of emulating and surpassing human intelligence.
- **MACHINE LEARNING (ML)** is a branch of AI that trains computers to learn from existing data and make predictions without being explicitly programmed.
- **DEEP LEARNING** is a subset of ML that enables computers to process information and learn in a human-inspired way.
- **GENERATIVE AI** trains computers and systems to use generative models to produce new content like images, text, audio and music, video, code, 3D objects, and synthetic data.

These generative models utilize deep learning to discern patterns within large datasets like images, text and sound. Once the models complete the learning process, they can be employed to accomplish various tasks, including:

- Generating synthetic images and text
- Translating and question/answer generation
- Summarizing text
- Interpreting the intent or meaning behind text
- Converting audio snippets into text
- Transcribing music

Generative AI vs. LLMs: What Does It Mean?

You have most certainly heard a lot in recent months about large language models (LLMs) along with news and media about generative AI. Before diving into the rest of this eBook, we wanted to share a quick overview of what LLMs are versus generative AI. Large language models are a specific type of generative AI that are designed to understand and generate language. They use relationships in language data to predict and generate sequences of words and are built using deep learning techniques. These models can understand context, generate coherent text and perform various natural language processing tasks like translation, summarization or answering questions. LLMs like ChatGPT have garnered a lot of publicity due to their powerful ability to understand and interact with users in a simplified manner.

In summary, while the terms are often used interchangeably, generative AI is a broader concept that encompasses various AI techniques for generating content, one of which is LLMs. In the rest of this eBook, we will primarily reference the umbrella category of generative AI.

Why All the Buzz Around Generative AI?

Massive, diverse, high-quality and open source datasets are driving the recent rise of generative AI applications and solutions. Through the use of data, AI models can be trained to learn patterns, correlations and characteristics of these large datasets. The result is pretrained, state-of-the-art models that can be readily accessed and tailored for various use cases across industries.

Significant advancements in computing are also making it easier for organizations to harness the capabilities of generative AI. Improvements in hardware, including graphics processing units (GPUs), robust cloud computing and open source AI software like Hugging Face, are fueling the shift toward generative AI. Now that data teams have the necessary tools and starting points, they can explore and experiment with generative AI.

Lastly, innovative deep learning models are gaining new enhancements on top of improved computational power — processing information more efficiently and exhibiting a greater capacity to respond like humans.

> Generative AI evolves the possibility and promise of AI exponentially. You can transform the conversation between the creator and the computer.
>
> **CYNTHIA STODDARD**
> Senior Vice President and Chief Information Officer, Adobe

Realizing Generative AI's Potential for the Enterprise

The accuracy and effectiveness of generative AI models have hit a tipping point, making once dreamlike use cases a reality. Many open source and customizable models are now accessible to enterprises, driving the next phase in AI adoption. Use cases that weren't feasible just a year earlier are being fulfilled cost-effectively by nontechnical business users. Through a joint research study with MIT (MIT Technology Review Insights: The great acceleration: CIO perspectives on generative AI), Databricks found that 80% of executives expect AI to boost efficiency by at least 25% and one-third expect the gain to be at least 50% in two years. These lofty expectations speak volumes about the excitement of this technology and the perceived impact within their organizations.

Executives across industries believe that generative AI use cases can cut costs and create new revenue by improving efficiency, speeding time-to-insights, expanding visibility and driving data-based decision-making. Due to the high ROI, it's no surprise that 88% of executives say they are investing in generative AI, and more than a quarter are already adopting it.

Behind this optimism, however, are common themes that these leaders acknowledge are a must-have foundation for generative AI to perform at scale with a sustainable TCO:

- **Data access**
  Ability to access all your data — any type, from any source, in real time.

- **Data governance**
  Governance is at the center of any successful AI strategy. Models are only as good as the secure, accurate and relevant data being sourced to them. Organizations need to ensure data pipelines and connections between sources remain resilient as updates are made and new sources are introduced. Retrieval augmented generation (RAG) is an AI framework that has gained much attention as it provides organizations with the ability to retrieve the most accurate and up-to-date data to ensure LLM models remain fresh and relevant. Resilience and scale aren't possible without governance, which covers data and the AI models themselves.

- **Data sharing**
  Finally, unleashing the impact of generative AI requires effectively leveraging the power of your entire ecosystem. By adding critical third-party data sources like the Databricks Marketplace, organizations can enrich models and get to better insights, faster — moving from a reactive to a proactive posture.

DATA ACCESS, GOVERNANCE AND SHARING ON THE DATA INTELLIGENCE PLATFORM, BUILT ON LAKEHOUSE ARCHITECTURE

DELTA LAKE: Delta Lake is the only open format storage layer that can automatically and instantly translate across open formats. Delta Lake unifies all data types for transactional, analytical and AI use cases out of the box, with support for streaming and batch operations. Delta Lake offers industry-leading performance and is the foundation of a cost-effective, highly scalable lakehouse architecture.

UNITY CATALOG: Unity Catalog is the industry's first unified governance solution for data and AI on the Data Intelligence Platform. With Unity Catalog, organizations can seamlessly govern their structured and unstructured data, machine learning models, notebooks, dashboards and files on any cloud or platform. This unified approach to governance accelerates data and AI initiatives while ensuring regulatory compliance in a simplified manner.

DELTA SHARING: Databricks and the Linux Foundation developed Delta Sharing to provide the first open source approach to data sharing across data, analytics and AI. Customers can share live data across platforms, clouds and regions with strong security and governance.

As generative AI steps into the limelight, its potential for creating new opportunities for enterprises has swiftly turned from speculation into reality. The anticipation surrounding generative AI illustrates the limitless potential and transformative impact within the enterprise.

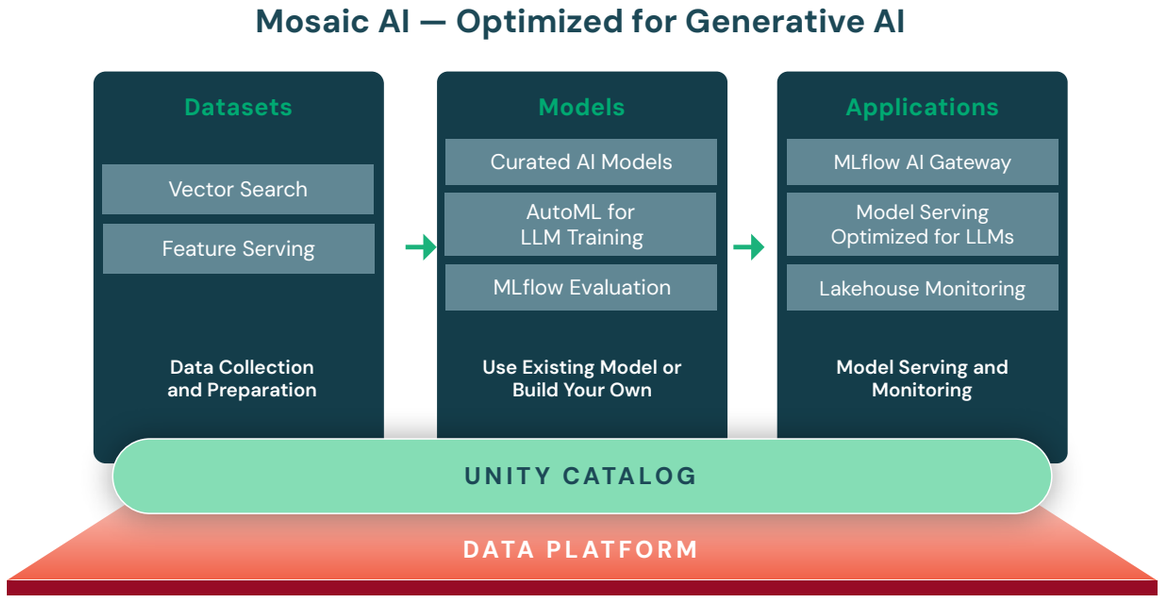
Data Intelligence Platforms: A Data-Centric Approach to Generative AI

Achieving meaningful results with generative AI hinges upon the ability of AI models to comprehend the unique jargon and data sources of each industry. That means different industries and organizations within those sectors all have to think about generative AI differently and how their datasets can contribute to generative AI solutions. To truly differentiate in the market, enterprises need to leverage their unique data in building generative AI solutions.

With Mosaic AI and its unique data-centric approach, we empower customers to develop and deploy AI models with speed, reliability and full governance on the Databricks Data Intelligence Platform.

> Generative AI is driving disruption across every industry, and CIOs recognize that leveraging AI is no longer a nice-to-have but is imperative to remain competitive. To support this, we'll see data-driven companies extend and commercialize models with their own data, integrating them into customized applications that make sense for their business.
>
> **MATEI ZAHARIA**
> Co-founder and Chief Technology Officer, Databricks, and
> Associate Professor of Computer Science, University of California, Berkeley

Organizations can start with their own enterprise data to quickly build and deploy generative AI solutions that are unique to their industry and domain — whether they want to build Q&A search bots using open source LLMs and retrieval augmented generation (RAG) together with their data, or create custom models by fine-tuning or training with their data. Mosaic AI comes with built-in governance and monitoring to ensure that the models are being built securely, with data privacy, permissions and compliance taken care of.



With MosaicML, companies can quickly, securely and cost-effectively build large AI models on their own data in their private environment.

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Generative AI Use Cases That Span Industries

With the ability to generate content, images, text and even entire scenarios, generative AI has unlocked a multitude of applications across industries and in fields as diverse as customer service, marketing, drug discovery and more.

DATABRICKS SOLUTION ACCELERATORS

Throughout this eBook we will be sharing links to relevant Databricks Solution Accelerators. Accelerators are purpose-built guides — fully functional notebooks and best practices — built to speed up results across your most common and high-impact use cases.

Check them out to learn more and share with your teams to save hours of discovery, design, development and testing — go from idea to proof of concept (POC) in as little as two weeks.

Optimizing Customer Experience

According to Databricks and MIT research, the most valuable generative AI use cases over the next two years will be focused on customer experience and personalization. With generative AI, organizations can summarize, translate and generate new text for humanlike interactions that adapt and match different languages, speaking styles and emotional tones. These models are also being applied to search engines to improve generated answers for faster resolutions.

With customer-specific data in your models, you can quickly, accurately and — with fewer resources — recognize, anticipate and satisfy the needs of individual customers, constituents, patients, etc.

- **Customize interactions and solve requests immediately**
  Owners of soon-to-expire policies, citizens paying taxes, patients eligible for health screenings and retail customers should each get what they want — automated solutions for renewing and upgrading policies, scheduling appointments, and processing returns and exchanges.
- **Generate written responses without humans**
  Automatically create new or update existing documents like medical reports, contracts and insurance policies.
- **Continuously optimize customer experience**
  Generative AI models constantly use feedback from prior experiences to influence future interactions with specific customer types.

DATABRICKS SOLUTION ACCELERATOR
Elevating customer satisfaction with LLM-powered chatbots
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Bolstering Cybersecurity

Protecting business-critical data from cyberattacks and accidental deletions, natural disasters, and hardware failures is paramount to keeping your organization running in today's cybersecurity landscape. Generative AI simplifies and reinforces cybersecurity responsibilities to control costs and deliver protection.

Many enterprises start their generative AI journey to increase profits, but prioritizing cybersecurity use cases is essential to avoid limitless cyber incident and data recovery costs, including damage to your reputation, loss of existing customers, and out-of-compliance fines and penalties.

- **Automate cybersecurity for better protection**
  Reduce the likelihood that an incident will occur due to human error — the number one cause of data loss — by automating threat detection, alerting and escalation, real-time responses, and various security-related tasks.
- **Multiply the force of cybersecurity analysts**
  A unified, data-centric AI platform democratizes generative AI for lower-skilled analysts to accelerate time to insights, reduce labor costs and allow higher-skilled analysts to focus on innovation.
- **Proactively fix security flaws in code**
  Scan infrastructure code, identify potential issues and automate the appropriate reaction to maintain the quality of your code and prevent cybersecurity vulnerabilities.

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Incident investigation using Graphistry
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Streamlining Supply Chains

Generative AI helps enterprises understand and integrate data across the supply chain to match upstream expectations with downstream output. As a result, traditional supply chain operations are modernizing.

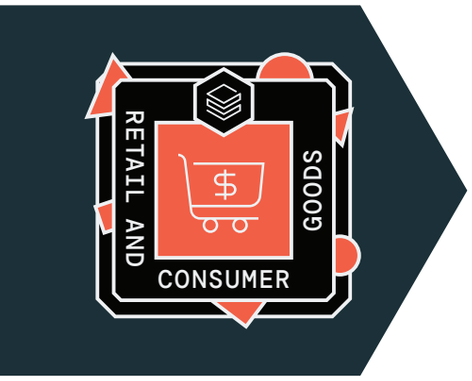
With generative AI, the supply chain can apply automation, enterprise-specific data, and high-visibility reporting to reduce disruptions, lower labor costs, increase speed and predict with precision.

- **Identify complex patterns in demand and forecasting:** Pair historical data and market trends with inventory levels, supplier lag time, and output to uncover intricate correlations and opportunities that legacy forecasting methods might overlook.
- **Select the best suppliers and manage with oversight:** Utilize performance metrics, quality records and pricing to identify suppliers based on predefined criteria and support the relationship with risk and opportunity insights.
- **Enhance predictive maintenance:** Prepare for evolving equipment needs and automate your response with generative AI's constant feedback loop that adjusts for model variations, changing environmental impacts and different types of machine use.

> LLMs now have the capability to achieve the necessary accuracy, and at a faster pace. We have aggregated data across a lot of different technologies over time, and I think what we're finding now is that the lakehouse has the best cost performance straight off.

ANDREW BLYTON
Vice President and Chief Information Officer, DuPont Water & Protection

INDUSTRY-SPECIFIC GENERATIVE AI APPLICATIONS



Retail and Consumer Goods

Customer-focused industries like retail and consumer goods have an AI advantage due to the wealth of business, customer and market data. Generative AI and LLMs make the most of this data, creating humanlike customer engagements and interactions across the lifecycle. With more consumers relying on digital shopping experiences, retail and consumer goods companies must translate in-store expectations into online experiences.

Use cases

- **Customize product recommendations:** Engage by using unique messages in email and online that specifically highlight relevant topics for that customer.
- **Try before you buy with virtual fitting rooms:** Rendering product images onto customer photos for an experience similar to being in-store.
- **Help customers with an in-store assistant:** Web and mobile applications integrate with store layout data and current inventory information for an omnichannel experience.
- **Streamline customer delivery and installation scheduling:** Integrate mobile apps, websites and in-store kiosks to easily coordinate options with customers and configure requirements like parts and resources.
- **Drive innovative product development:** Apply customer preferences, market trends, product feedback, document discovery and contract reviews to meet customer needs better and faster than the competition.
- **Optimize demand prediction and inventory planning:** Consider historical sales analysis, consumer sentiment and competitive data to help forecast trends and recommend appropriate inventory levels by location.

USE CASE SPOTLIGHT

Improve product search with enterprise data

Search is one of the most common features used by online consumers. They want to find what they need quickly, easily and in as few clicks as possible. Due to the saturation of the retail and consumer goods industry, if people aren't immediately satisfied with your website, they will turn to one of your competitors instead.

With generative AI, enterprises can train models using product descriptions, written content and transcripts of audio recordings to better respond to searches. Unlike traditional search and answer automation, generative AI models can fine-tune toward the most relevant search content. Now, LLM-based search models can respond to user prompts in a manner that is more consistent with enterprise-specific data. For enterprises, that means a longer time on the page, more clicks within the website, higher engagement and a better customer experience that drives sales.

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Enhancing product search

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USE CASE SPOTLIGHT

Automate chatbots with humanlike onboarding and training

Agent-led service and support demand that businesses employ large numbers of individuals trained and well-versed in corporate policies and procedures. Unfortunately, call center turnover is high, and training representatives to respond per the rules is time-consuming and expensive. Attempts at offloading requests to online knowledge bases, interactive voice response systems, and prior generations of chatbots have often frustrated and underserved consumers.

Now, organizations can use the same documents previously used to train human agents to train generative AI models for advanced chatbot capabilities. Instantly get chatbot agents up to speed on enterprise-specific information, deploy agents at scale and align your chatbot with customer demand for high-quality, humanlike interactions. Chatbot agents never tire, have a bad day or quit, thus reducing hiring and labor costs and increasing customer service. For human agents, generative AI can provide guidance and support to improve speed, efficiency, consistency and accuracy while reducing ramp-up time.

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Build an LLM-enabled chatbot

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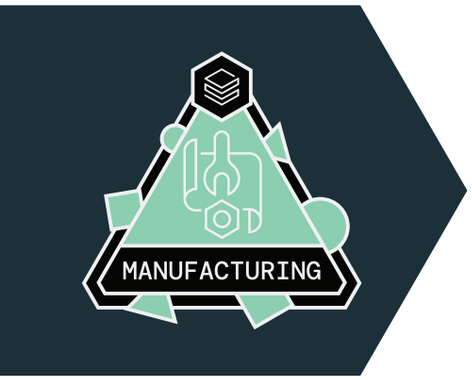
INDUSTRY-SPECIFIC GENERATIVE AI APPLICATIONS



Manufacturing

The manufacturing industry generates massive volumes of complex unstructured data via sensors, images, video and telemetry across vehicles, factories, buildings and workers. Enterprises need the ability to stream data in real time and fuse it with contextual data sources to respond to events meaningfully. People do not want more apps, data and browser windows to slow and complicate processes. Generative AI fundamentally changes how people interact with systems and documents to improve productivity, customer satisfaction and financial performance across manufacturing processes.

Use cases

- **Apply predictive analytics for production planning:** Automate the probability of failure for every part and supplier, and identify potential risks and solutions before a defect or loss occurs.
- **Design and engineer change analysis:** Get material and part-level information for traceability to qualify the design and regulatory impact of engineering product changes based on known safety and regulatory standards.
- **Utilize digital twins to test real-world scenarios:** Replicate processes, systems and physical assets, including production lines, to understand and prepare for potential consequences.
- **Augment operational technology (OT) data engineering teams:** Reduce the expertise required to deliver OT solutions and conserve labor costs with software development assistants.
- **Troubleshoot technical issues in field service:** Summarize relevant sections of lengthy technical manuals logically to simplify error code searching and issue resolution.
- **Take prescriptive maintenance actions:** Integrate analytics from thousands of similar events encountered by other technicians to determine the best maintenance plan for maximum uptime and technician efficiency.
- **Augment customer support teams:** Close tickets faster with AI-guided scripts designed to help customers resolve their specific open and unresolved issues.

USE CASE SPOTLIGHT

Supply chain optimization

The delivery of goods across a global distribution network is highly costly and logistically complex. In order to mitigate risks and the impact of disruptive events, manufacturers need to gain more visibility into the supply chain by unifying their data across siloed systems and acting on that data in real time. Generative AI can help manufacturers optimize supply chain operations through a number of factors like forecasting demand, managing inventory, optimizing delivery routes, selecting and managing suppliers, and planning production.

Take, for example, a manufacturer of automotive parts whose goal is to maintain adequate stock levels while minimizing holding costs and reducing risk of stockouts. In this scenario, generative AI models could be built to analyze historical sales data, lead times from suppliers, production schedules and inventory carrying costs, along with market trends, seasonal variation and economic factors to develop a more detailed and accurate recommendation for inventory and parts.

DATABRICKS SOLUTION ACCELERATOR

Supply chain distribution optimization

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USE CASE SPOTLIGHT

Quality control

Generative AI's ability to learn from complex data patterns, make predictions and optimize processes makes it invaluable for streamlining quality control in manufacturing. It can help speed up the detection of defects, enhance product consistency, reduce waste and ultimately make customers happier by delivering high-quality products on time.

Quality control managers should view generative AI in their space as complementary to their work, not as a replacement. It empowers them to achieve soaring efficiency, craft top-tier products, and slash both time and costs. Effectively, bring products to market faster and speed up their time to revenue.

DATABRICKS SOLUTION ACCELERATOR

Product quality inspection

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INDUSTRY-SPECIFIC GENERATIVE AI APPLICATIONS

Communications, Media and Entertainment

Across the communications, media and entertainment industry (CME), organizations are on a quest to deliver the next disruptive innovation powering personalized 1:1 experiences at scale. Generative AI is revolutionizing the way CME organizations develop more personalized experiences, create new paths to monetization and drive data-driven content creation.

Use cases

- **Increase customer satisfaction and reduce support costs:** Leverage AI-guided interactions and LLM-powered chatbots to improve customer support and self-service capabilities. Here, LLMs can assist in resolving customer inquiries, providing accurate information and guiding customers through troubleshooting processes.
- **Drive contractor or new employee onboarding:** Help new employees or contractors find answers to questions related to field maintenance and equipment resets, and answer common customer questions and other internal self-service use cases.
- **Personalize content discovery:** Help consumers find and engage with hyper-relevant content that satisfies their immediate needs using accurate search and response, keyword mapping, and targeted automatic recommendations.
- **Bring non-player characters (NPCs) to life:** Create more immersive video games with humanlike NPCs that dynamically adapt to players and evolve the environment to keep gamers engaged longer with higher satisfaction.
- **Automate or augment creative workflow processes:** Save time and money in media production, editing and postproduction with a transformer architecture for sequence-to-sequence tasks and long-range dependencies — such as a tool that can help organize the scenes in a video and remember important details from beginning to end.
- **Create new and informed content quickly:** Auto-generate scripts and articles, create music, design artwork and brainstorm ideas for new content.

USE CASE SPOTLIGHT

Call center automation

Call centers play a pivotal role as the frontline for customer interactions and support for communications, media and entertainment — providing customer assistance with account setup, troubleshooting technical issues or adjusting their subscription plans to elevate customer experiences by delivering personalized and relevant suggestions that align with individual tastes.

With customer data generated at every touchpoint, generative AI models can scan and analyze endless amounts of documentation and support information, empowering call center agents with insights to address customer inquiries efficiently. Armed with these insights, agents have the means to bolster the overall level of customer satisfaction and first-call resolution while also dropping the average handle time for each customer interaction. The result is a streamlining of customer support processes, yielding benefits in terms of operational efficiency and the reinforcement of customer loyalty. Additionally, generative AI models can analyze historical support data to identify common issues, patterns and trends, enabling communication providers to proactively address customer needs and improve overall support effectiveness.

DATABRICKS SOLUTION ACCELERATOR

LLMs for customer service and support

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USE CASE SPOTLIGHT

Customer experience personalization

Personalization is now table stakes for success for communications, media and entertainment leaders as they look to provide smarter experiences on any channel, anywhere, at any time. LLMs provide a revolutionary approach to delivering highly personalized experiences that captivate audiences in real time and with a highly relevant experience.

Take, for instance, streaming media. With conversational interfaces powered by generative AI, content platforms can engage users through natural language prompts, allowing for more personalized recommendations, intelligent search capabilities and tailored content discovery that can be done in real time. By understanding user preferences, behaviors and contextual cues, generative AI empowers companies to deliver a smarter, more immersive media experience that keeps viewers coming back for more.

DATABRICKS SOLUTION ACCELERATOR

Recommendation engines for personalization

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INDUSTRY-SPECIFIC GENERATIVE AI APPLICATIONS

Public Sector

Organizations in the public sector face the added challenge of operating within the confines of state, federal, international and industry-specific regulations. Generative AI connects the complex legalese typically used to set standards with enterprise data across processes to ensure compliance. Leveraging these use cases, public sector enterprises can align with regulations, demonstrate proof to oversight committees through reporting, and avoid steep out-of-compliance fines and penalties.

Use cases

- **Optimize human resources across federal agencies:** Manage the challenges of an extensive employee base by automating résumé screenings, matching candidates to job descriptions, and analyzing feedback to improve hiring and workforce engagement.
- **Simplify technical documents for faster resolutions:** Replace internal documentation with summarizations that can automatically be analyzed and made available for accurate search results and report creation.
- **Assist in training and education with a central knowledge base:** Analyze audio recordings of lectures and training, syllabi and lab instructions so students and trainees can search and automatically source answers about coursework.
- **Modernize legacy code bases and accelerate migration:** Take advantage of innovations in code — including code converters, code copilots and code explainers or summarizers that streamline and organize migration activities.
- **Identify foreign threats with intelligence analysis:** Use text processing and extraction, multilingual analysis and translation, pattern recognition, data fusion and adversarial intent detection for comprehensive intelligence gathering and discovery.
- **Assess data privacy and disclosure risk:** Evaluate potential privacy risks, disclosure concerns, anonymization techniques and cybersecurity readiness, and suggest privacy-preserving methods to protect customers while maximizing data utility.
- **Manage assets with predictive maintenance:** Extend the life of assets, avoid downtime, allocate resources, track asset inventory and produce reports per regulations and risks.

USE CASE SPOTLIGHT

Regulatory compliance assistance

Navigating intricate legal frameworks and staying updated on evolving requirements is key for any organization to achieve regulatory compliance — whether it's enforcing regulations related to environmental protection or regulating transportation sectors such as aviation, railways and roadways to ensure proper safety standards are met. Due to the complexities of laws and evolving regulations, there are massive troves of documentation that need to be reviewed to ensure businesses and individuals adhere to legal standards.

With generative AI models, any business or organization can quickly interpret legal jargon, abstract clauses and complex terminologies, translating them into comprehensible insights that facilitate swift comprehension of not only compliance obligations but what is required to meet them.

USE CASE SPOTLIGHT

Call center support and chatbots for constituent engagement

Effective call center support stands as a linchpin of successful governance and service delivery. Constituents, ranging from citizens to businesses, rely on government agencies to provide accurate information, assistance and solutions promptly. Whether it's a citizen inquiring about a tax filing deadline or a business seeking permits, delivering the right information at the right time cultivates a positive perception of public services and reinforces the vital relationship between the government and its constituents.

By powering sophisticated chatbots and virtual assistants, generative AI models are enabling government bodies to efficiently support their constituents across a wide array of topics — serving as expert guides providing reliable and relevant information.

DATABRICKS SOLUTION ACCELERATOR

Natural language processing (NLP) for customer service analytics

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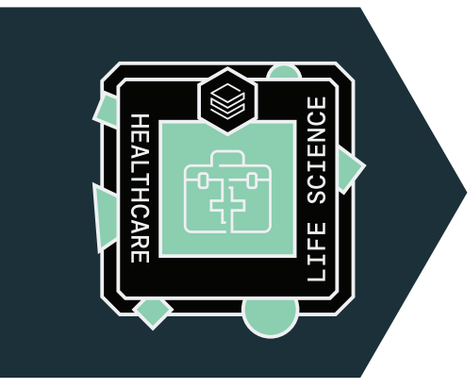
INDUSTRY-SPECIFIC GENERATIVE AI APPLICATIONS



Healthcare and Life Sciences

The opportunity to disrupt the healthcare and life sciences industries with generative AI is within reach. We need it now more than ever. Healthcare inefficiencies contribute to billions of dollars in waste, including administrative complexity, fraud and abuse, and failure to coordinate care. For life sciences organizations, not only is the development of new drugs, therapies and digital solutions highly competitive, it's costly and time-intensive. Discovery of new drugs and bringing them to market quickly is advantageous.

By unlocking vast amounts of data, we have an opportunity to tap into the potential of artificial intelligence. Generative AI reduces cost and increases time to insight by automating processes, increasing personalization with chatbots and introducing data-driven efficiencies. This can lead to improved patient care and reduced administrative burden, and can speed time to market. Here's where we see generative AI manifesting across the industry:

Use cases

- **Reducing clinical note documentation and transcription:** If you've ever stepped foot into a doctor's office, you're familiar with the electronic health record (EHR); your vital signs, medical history, medication orders and more are captured here every visit. Healthcare providers spend a considerable amount of time in their day interacting with the EHR — up to 5 hours for every 8 hours of scheduled clinical time (or over 100 million hours per year). Notes that are then transcribed by human medical transcriptionists, costing millions of dollars annually. LLMs can assist in analyzing patient data, improving accuracy and ensuring proper reimbursement for healthcare providers.

- **Improved patient and member engagement:** Chatbots and virtual assistants are deployed on a healthcare organization's website or mobile application, providing an interactive, real-time way to enhance patient communication and guidance. For care teams, LLMs can help summarize and streamline responses to patient portal inbox messages.

- **Clincal note and biomedical literature synthesis:** LLMs can process and synthesize vast amounts of publicly available scientific literature. Combining this data with an internal knowledge base, LLMs enable researchers to stay up to date with the latest discoveries and identify novel research hypotheses across a large corpus of text.

- **Clinical trial optimization:** The typical drug trial can take years and cost billions of dollars. LLMs can help identify suitable patient populations for clinical trials, optimize trial design, predict patient outcomes and accelerate recruitment, improving the efficiency and success rates of clinical research. Moreover, leverage LLMs to speed up summarized report generation from Contract Research Organizations (CROs) for R&D and Global Medical Affairs to submit for regulatory review and approval.

- **Drug repurposing:** By analyzing the properties of existing drugs and their interactions with various targets, LLMs can identify new therapeutic uses for approved drugs, shortening the drug development timeline and reducing costs.

- **Next-best action driving commercial effectiveness:** LLMs can summarize interactions between sales representatives and healthcare professionals (HCPs) through phone and email transcripts with healthcare providers, suggesting the next-best step.

USE CASE SPOTLIGHT

Synthesize biomedical literature for easy-to-digest research

Researchers and healthcare providers are inundated with vast amounts of lengthy and complex medical literature and data. What used to take hours to review and analyze can now be summarized automatically for research and development, regulatory understanding, identifying the latest treatments, understanding rare diseases, and keeping up to date on discoveries.

Generative AI and LLMs integrate summarizations with internal enterprise knowledge bases to highlight the information most relevant to that organization. With open access to simplified research, the humans fueling healthcare and life sciences are empowered to discover insights faster. Everything from clinical trials and drug repurposing to medical diagnostics, mental health support and imaging analysis can improve when expanding access to knowledge contained in biomedical literature. Now, researchers and healthcare providers can quickly access, interpret, analyze and eventually apply the latest advancements in their field to further patient care and overall public health.

To get started, organizations can leverage an open source, fine-tuned large language model like Llama 2 and an open source orchestration framework like LangChain, like in this Solution Accelerator, to summarize biomedical literature with Q&A.

USE CASE SPOTLIGHT

Enable data-driven next-best-action

The healthcare and life sciences industry is a vast ecosystem of moving parts that work together for continuity of care, consistency and service optimization. Healthcare providers need comprehensive patient profiles to quickly and confidently create treatment plans for high-quality care. Unfortunately, information exchanged through phone and email communications is typically absent from patient records, siloed across multiple systems of record. Equipped with a complete picture of the patient's history, clinical teams can leverage generative AI for predictive insights, diagnostics and next-best action. Care recommendations can be generated automatically with an intuitive and conversational experience that satisfies patients and reduces waste across departments.

In the life sciences industry, generative AI models can also summarize interactions between sales representatives and healthcare professionals using phone and email transcripts from healthcare providers. Using LLMs, organizations can drive commercial effectiveness with customers by leveraging actionable insights to augment the performance of marketing and sales.

> We found a very significant improvement in the accuracy and predictability of using that AI model to a point where there could be a significant reduction in mortality. For this to work, we have to build trust and help healthcare workers understand, hey, this is what AI can do. The technologies that we're putting in place are enabling physicians to be a part of the development of AI, and because of the level of validation involved, I think there will be more trust in the models that we develop.

RICHARD SPENCER SCHAEFER
Chief Health Informatics Officer, Kansas City VA Medical Center

INDUSTRY-SPECIFIC GENERATIVE AI APPLICATIONS

Financial Services

Financial services institutions are always in search of new ways to refine risk management, optimize operational efficiency and enhance customer experiences. Generative AI provides the tools these organizations need to pull from their massive volumes of complex unstructured and sensitive data. With these capabilities, financial services firms can significantly lower operational costs while expanding customer options and accessibility based on internal and external data analysis.

One example of workflow optimization is building an internal search engine. In financial services, onboarding a new joiner has become a full-time job for many firms. What if internal wikis, Confluence pages and FAQs could be scraped to build a knowledge base around internal processes, guidelines, best practices, roles and entitlements? When linking to metadata and a data catalog, the same can be applied to better navigate a complex data estate.

Use cases

- **Meet compliance regulations:** Summarize complex legal and regulatory requirements to avoid out-of-compliance costs like fees and penalties, reputational damage and business loss.
- **Prevent financial crimes and fraudulent activities:** Minimize false positives and negatives, identify fraud patterns and identify potential issues like overbilling so that humans can intervene accordingly.
- **Expedite claims processing:** Triage claims quickly with an automated 24/7 claims assistant that can identify irregularities and key points in complex text spanning hundreds of pages of unstructured data.
- **Assist agents with auto-drafted email responses:** Streamline communications, resolve issues quickly and accelerate agent output with prepared email responses to common requests and questions.
- **Generate settlement offers based on predefined criteria:** Analyze various claim components to suggest settlements using historical data like past settlement payouts and claim adjustment information.
- **Increase broker productivity with automatic email triage:** Detect, prioritize and route incoming emails to help brokers focus on higher-value activities.
- **Accelerate underwriting decisions and policy drafts:** Offload manual research and review processes required for risk assessment and policy generation using summarization and automatic drafts.

USE CASE SPOTLIGHT

Personalization meets scale with call center analytics

Financial institutions have a treasure trove of untapped customer insight from support requests, feedback and complaints. For instance, a bank or insurer may capture customer feedback about its products and services to evaluate customer sentiment and product performance (e.g., cards, auto insurance, savings). With the ability to summarize content into categories and provide recommendations, generative AI could be used to suggest change across different channels. Similarly, complaints are usually stored on disks, untapped given the complexity and volume of data. While natural language processing (NLP) can be used for classification, gen AI could provide advocacy teams with more actionable insights.

LLMs are humanizing chatbots, automated communications and agent support to allow financial institutions to respond to customer requests and inquiries with emotion, understanding and accurate responses.

Unlike traditional AI, generative AI personalizes customer service using successes and failures of the past. With the ability to fine-tune answers to questions and policy information, customers can solve conflicts and learn more about their policies without assistance. When customers contact the institution, they are delighted with fast and accurate responses and resolutions from knowledgeable human and automated agents.

DATABRICKS SOLUTION ACCELERATOR

LLM for customer service analytics in insurance

LEARN MORE →

USE CASE SPOTLIGHT

Inform investments with news and financial reporting

Data is crucial to making the best investments for your institution's goals, which is why financial firms are keen to accelerate the adoption of generative AI. It's given the financial services industry a new perspective on market analysis with summary extraction, automation and intelligent model training. Never before have financial institutions been able to join so many different factors — from news and financial reporting, consumer sentiment and market trends to your firm's growth and expectation goals and available resources.

Specifically in the area of sustainable and ESG investments, the proliferation of reports, rankings and metrics and the lack of standards make it nearly impossible to measure ESG actions and goals at scale. LLMs can extract and summarize topics descriptive to CSR reports and help create a score to show how companies describe their own ESG performances relative to the perception in news analytics.

Beyond having access to the data, financial institutions can also understand and apply insights with automatic reporting, investment suggestions and predictive analytics. Expand your perspective to lower losses, plan for wins and account for the what-ifs. However, it is important to note that LLMs may not offer an objective view on a company strategy. Manual investigation may be needed before converting LLM outcomes into trading strategies.

Based on a financial institution with ~$1B in annual revenue, generative AI's estimated annual impact is $1.5M–$32.3M* in workflow optimization.

*Databricks value model based on our work with 9,000+ customers across industries and globally.

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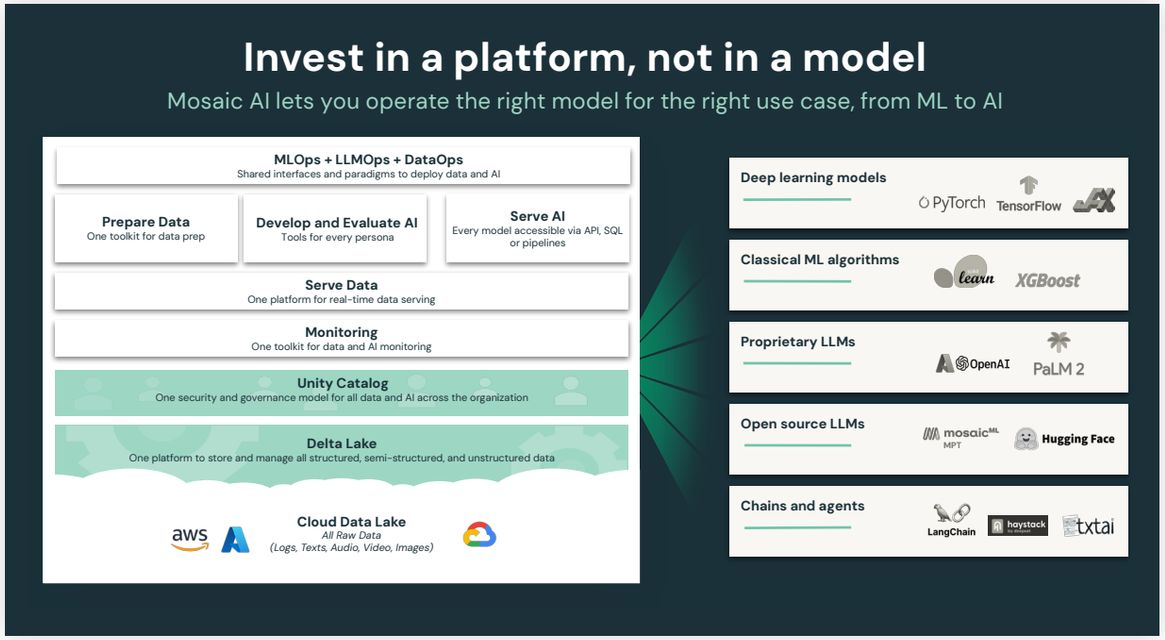
Databricks Data Intelligence Platform for Generative AI: Invest in a Platform, Not Just a Model

Generative AI will have a transformative impact on every business. Databricks has been pioneering AI innovations for a decade, actively collaborating with thousands of customers to deliver AI solutions, and working with the open source community on projects like MLflow, with 11 million monthly downloads. With Mosaic AI and its unique data-centric approach, we empower customers to develop and deploy AI models with speed, reliability and full governance.

The Databricks Data Intelligence Platform unifies the data and AI platform so enterprises can develop their generative AI solutions faster and more successfully — from using foundational SaaS models to securely training their own custom models with their enterprise data. Mosaic AI lets you operate the right model for the right use case, from ML to AI. Organizations can accelerate their generative AI journey by bringing together data, AI models, LLM operations (LLMOPs), monitoring and governance on the Databricks Data Intelligence Platform.



Mosaic AI: The first AI platform built directly into the data layer.

> At JetBlue, we inspire humanity through our product, culture and customer service. Databricks has been instrumental in our AI and ML transformation and has helped us build our own LLM, enabling our team to more effectively use the BlueSky platform to make decisions using real-time streams of weather, aircraft sensors, FAA data feeds and more.
>
> **SAI RAVURU**
> Senior Manager of Data Science and Analytics, JetBlue

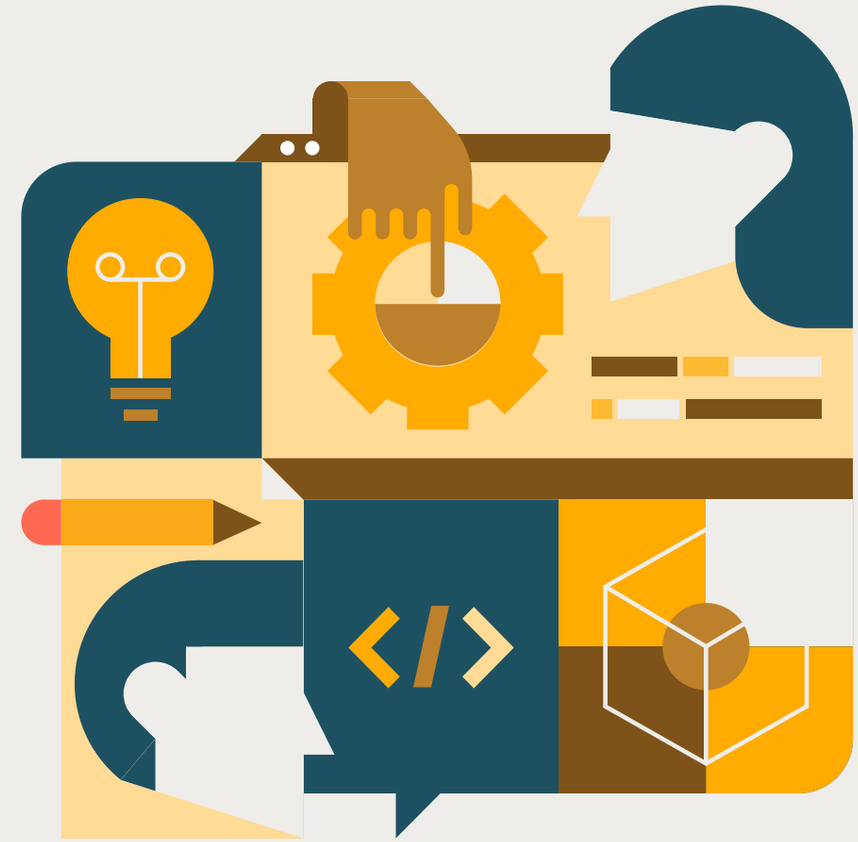
Start Your Team's Journey With Generative AI Today

With the Databricks Data Intelligence Platform as the cornerstone of your AI strategy, the full potential of generative AI is at your fingertips. Start on your generative AI journey with Databricks and redefine what's possible for your organization.

Tap the full potential of generative AI in this thorough yet concise eBook on the latest breakthroughs in NLP and LLM. Get up to speed on the DI Platform with free **Databricks Fundamentals** training.

Or, let's connect to discuss generative AI and your enterprise.

CONTACT US →



About Databricks

Databricks is the data and AI company. More than 10,000 organizations worldwide — including Comcast, Condé Nast, Grammarly and over 50% of the Fortune 500 — rely on the Databricks Data Intelligence Platform to unify and democratize data, analytics and AI. Databricks is headquartered in San Francisco, with offices around the globe, and was founded by the original creators of Lakehouse, Apache Spark™, Delta Lake and MLflow. To learn more, follow Databricks on LinkedIn, X and Facebook.

START YOUR FREE TRIAL →

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