

TD SYNNEX

Destination AI
AI & ML Enablement Guide for Resellers

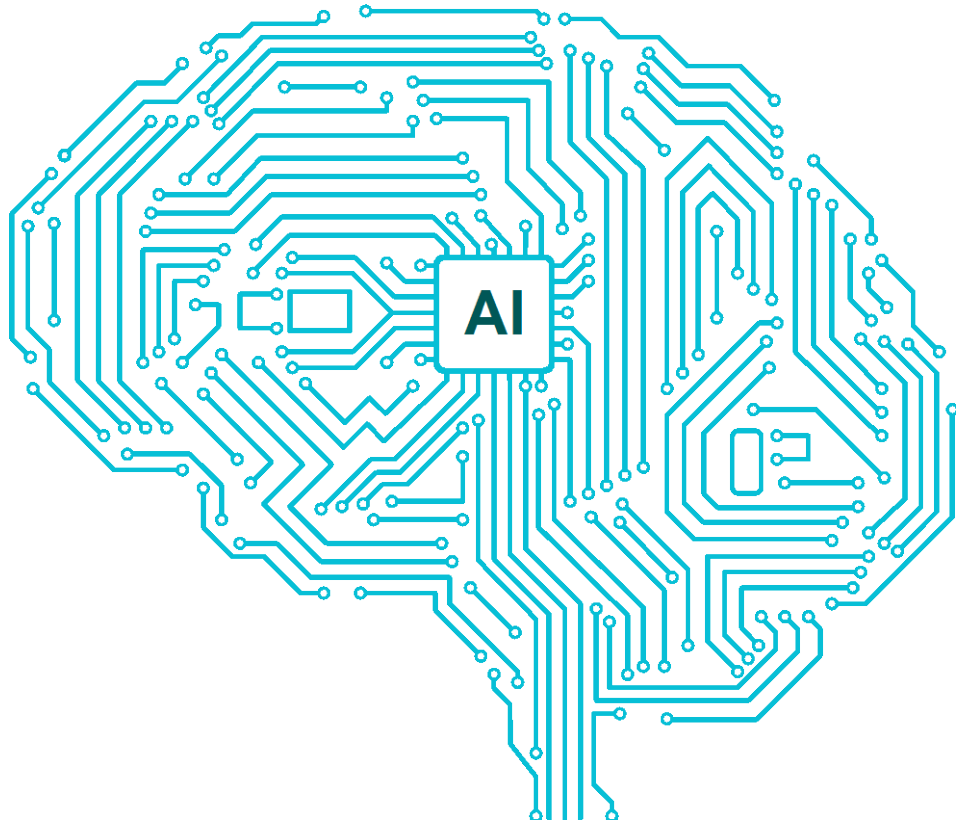
The Impact and Opportunity of AI & ML

V 1030.1

The Adoption of AI is a Top Enterprise IT Priority & Initiative

Gartner estimates that AI will create $2.9 trillion in business value and 6.2 billion hours of worker productivity in 2021

- A June 2020 report from Gartner states that “smarter, faster, more responsible AI” is the #1 trend in data and analytics technology, as 75% of organizations will “shift from piloting to operationalizing artificial intelligence”
- In March 2020, McKinsey reported that 76% of high-performing organizations have taken a standardized approach to AI technology, compared to only 18% of others
- According to Grand View Research: The global artificial intelligence market is expected to grow at a compound annual growth rate of 42.2% from 2020 to 2027 to reach USD 997.77 billion by 2028
- By 2025, 44% of generated data will be driven by analytics, AI and Machine Learning



AI Adoption

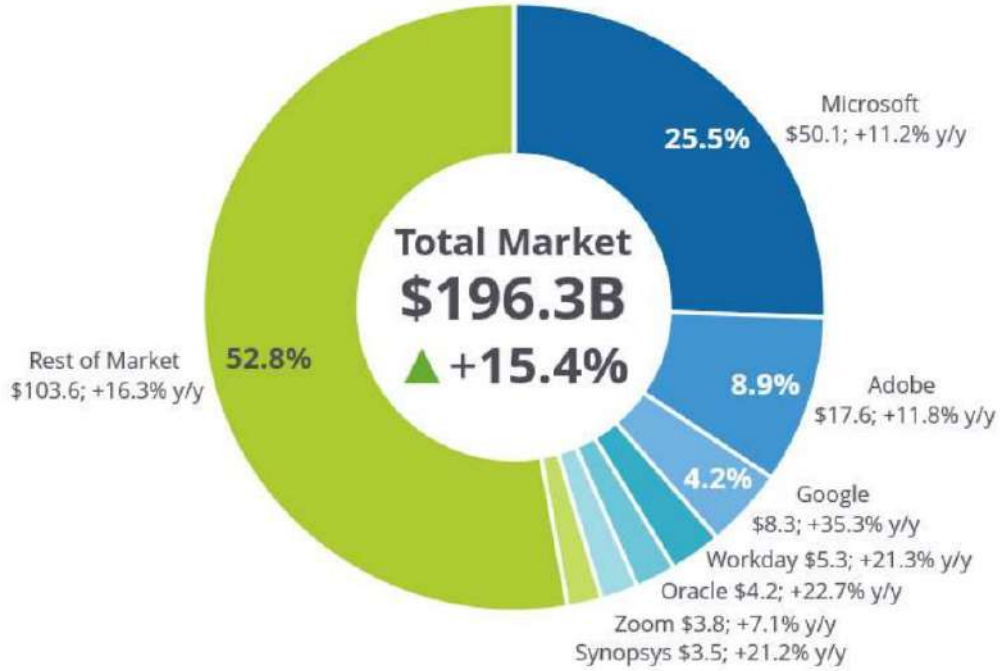
IDC/Seagate Re-Think Data Report 2020

Embedded Artificial Intelligence Is Becoming Increasingly Important

Despite continuing financial challenges the market for artificial intelligence applications software grew by 15.4% to $196.3 billion in 2022

- An IDC survey from April 2022 of more than 2,000 IT and line-of-business (LOB) decision makers confirms that adoption of artificial intelligence is growing worldwide. Organizations plan to spend 4% more on AI initiatives in 2022 than in 2021
- This IDC study presents a view of worldwide artificial intelligence (AI) platforms revenue broken down by vendor for the historical year 2022
- Due to its robust infrastructure, digital ecosystem, and skilled workforce, the Americas region led in AI adoption with 64.3%, followed by EMEA (23.4%) and APJ (12.2%)
- The top 5 AI Applications vendors are Microsoft, Adobe, Google, Workday, and Oracle. All have continued to grow at incredible rates ranging from 11.2% to 35.3%. Google, Workday, and Oracle all had growth rates of more than 20% in 2022

Worldwide AI Applications Market Share 2022



Note: 2022 Share (%), Revenue ($B), and Growth (%)

Source: IDC, 2023

Note that this market share does not include native generative AI

IDC Worldwide Artificial Intelligence Applications Market Shares, 2022 Embedded Artificial Intelligence Is Becoming Increasingly Important, Transforming Our Daily - 2023 Sep.pdf

What is Artificial Intelligence (AI)

McKinsey & Company

"The ability of a machine to perform cognitive functions we associate with human minds, such as perceiving, reasoning, learning, and problem solving"

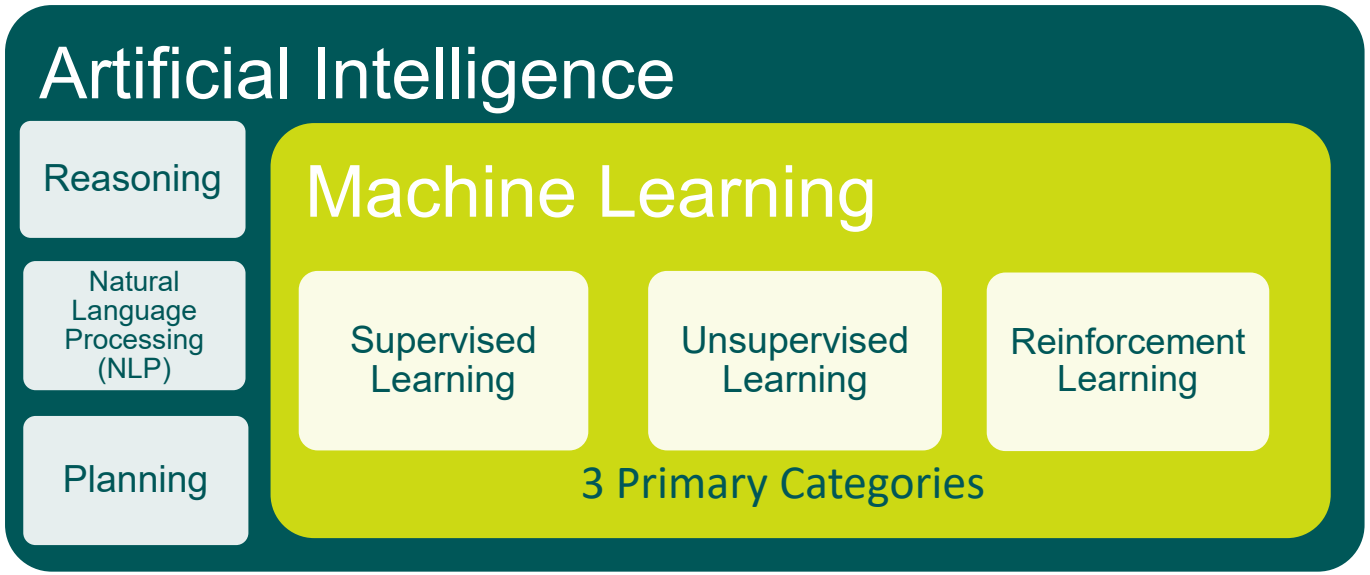
Gartner

"Advanced analysis and logic-based techniques, including machine learning, to interpret events, support and automate decisions, and take actions"

IBM

"Any human-like intelligence exhibited by a computer, robot, or other machine. In popular usage, artificial intelligence refers to the ability of a computer or machine to mimic the capabilities of the human mind—learning from examples and experience, recognizing objects, understanding and responding to language, making decisions, solving problems"

Machine Learning is a Subset of Artificial Intelligence



Machine learning combines data with statistical tools or algorithms that can learn and makes decisions based on patterns observed

Computer Vision and **Natural Language Processing** make heavy use of Machine Learning

AI Reasoning is deriving logical conclusions and making predictions

AI NLP enables machines to understand human language

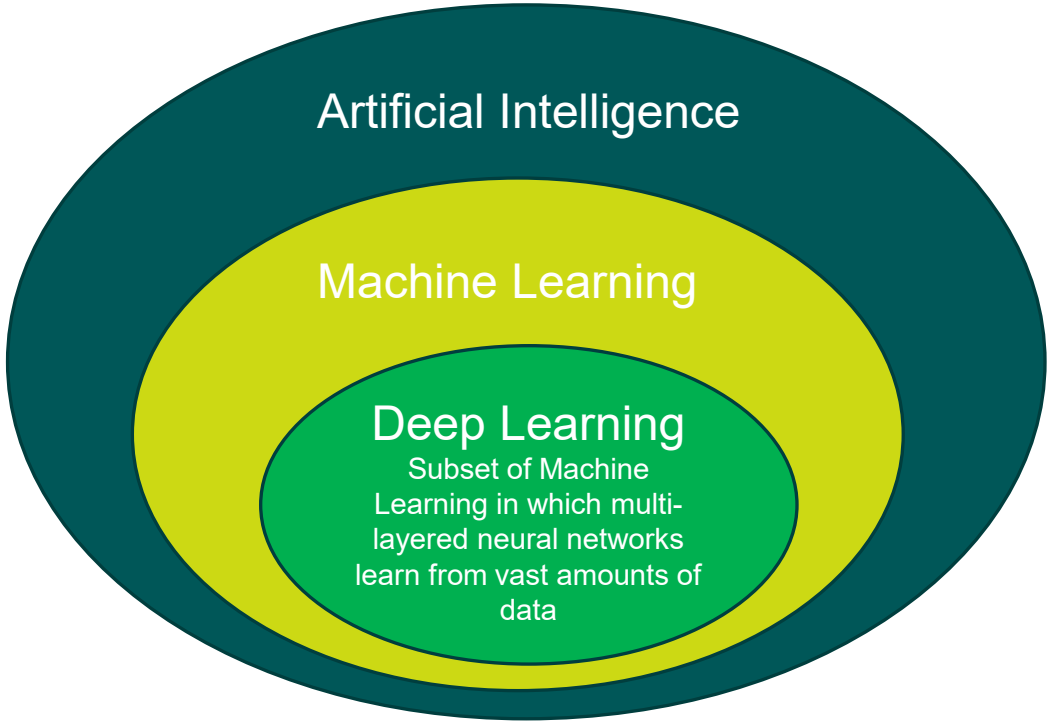
AI Planning is the decision-making tasks performed to achieve a specific goal

To see a visual representation of the three primary machine learning categories, watch this short video:



What Makes Machine Learning “Deep Learning”?

Deep learning is a subset of machine learning that incorporates neural networks in successive layers to learn from data in an iterative manner. Deep learning complex neural networks are designed to emulate how the human brain works, so computers can be trained to deal with the more difficult computing problems, such as computer vision and natural language processing.

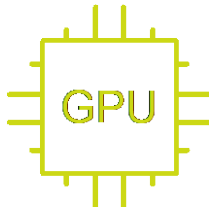


There are three components to Deep Learning



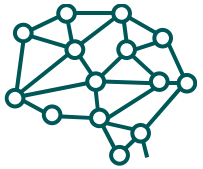
1. Large Data Sets

Lots and lots of data to train these big neural networks.



2. GPUs/VPUs/TPUs

specialized type of hardware to handle large complex data sets.



3. Neural Network

Are computing systems with interconnected nodes. Using algorithms they recognize hidden patterns and correlations, and over time continuously learn and improve

To access a more technical explanation of Deep Learning click on the following Link: Introduction to Deep Learning

What's an Enterprise AI Platforms?

AI platforms (also called machine learning platforms or data science platforms) allow users to analyze data and process data, build machine learning models, deploy and maintain these models

AI & Machine Learning Market Landscape – 3 Categories

1. **AI Open Source Frameworks, Libraries & Components** – such as TensorFlow, Torch, IBM Watson, OpenVINO, TensorRT and many others are frequently positioned by their promoters as AI solutions. Each of these provides a valuable utility needed to develop and deploy **Enterprise AI**, but each addresses only a narrow portion of the total capabilities required. Using this approach, organizations must effectively create their own **Enterprise AI platform** by assembling, integrating, and maintaining dozens of such components.

2. **AI Cloud Service Providers (CSPs)** - such as AWS and Azure provide a large array of native services that can be used to assemble **AI applications**. The advantage of this approach over attempting to build AI applications using open-source components is that a CSP's native services have been designed to work on the CSP's infrastructure and are not portable from one CSP to another. So, **an application developed on AWS using AWS native services would have to be substantially rewritten to run on Azure**. In addition, this approach precludes the ability to build an application using services from different CSPs (for instance, an application using AWS's image recognition service in conjunction with Google's geospatial capabilities.

AI & Machine Learning Market Landscape

3. **Enterprise AI** is a powerful new category of software that is a core enabler of digital transformation. In the coming years, virtually every large organization will deploy dozens to hundreds, or even thousands of **AI-enabled software applications**. These applications leverage 21st century technologies including **elastic cloud computing, big data, the internet of things, and advanced methods of artificial intelligence** to address a broad and growing range of use cases. Enterprise AI software involves simulating a number of capabilities, including reasoning, learning, problem solving, perception, and knowledge representation.

   Today, Artificial intelligence software is at work in applications such as your smartphone assistant, ATMs that read checks, voice and image recognition software on social networks, and in the software that serves up ads on many of the websites you use.

Enterprise AI Platforms

An **Enterprise AI Platform** is designed to provide a cohesive set of capabilities in a unified, pre-integrated suite to build, deploy, and operate Enterprise AI applications. The intention of a platform is to simplify and accelerate the development and deployment of Enterprise AI applications. AI platforms (also called machine learning platforms or data science platforms) allow users to analyze data and process data, build machine learning models, deploy and maintain these models. To be categorized as an AI platform, a product must be able to work with a variety of use cases, should not be specific to one industry and allow users to build, deploy and maintain models that power business decisions.

Key Technologies

- **Neural Networks**
- **Transfer Learning**
- **Explainable AI**
- **Reinforcement Learning**
- **Natural Language Processing (NLP)**
- **Computer Vision**
- **Cloud Systems:** A robust cloud infrastructure provides improved scalability and access to resources for the implementation of complex AI and machine learning solutions.

TD SYNNEX Vendors	Product Name
Alteryx:	Machine Learning
Artisight:	AI-as-a-Service for Healthcare
Chooch	Computer Vision AI Platform
Cloudera:	Cloudera Data Platform, Machine Learning
IBM:	Cloud Pak for Data
Pentaho:	Machine Learning Orchestration
AWS:	Amazon SageMaker
Google:	AI Platform, Cloud Machine Learning Platform
Microsoft Azure:	Machine Learning Studio
Oracle:	Data Science Cloud Services
HPE:	Determined AI
Intel:	OpenVINO™
Run.ai:	Atlas
AWS:	Kendra, Personalize, Translate, Forecast, Fraud Detector, Lookout, Guru, SageMaker
Automation Anywhere:	RPA, Document Automation

Other Vendors	Product Name
DataRobot:	DataRobot
Wipro:	Holmes
C3.ai	C3 AI Suite
PEGA:	Pega Platform
Salesforce:	Einstein
H2O.ai:	H2O AI Hybrid Cloud

Further explore TD SYNNEX's analytics solutions, products, and vendors with our interactive SPI Tool: https://recon.tdsynnex.com/spitool/

No Code, Low Code AI

No-code AI is a category in AI landscape that aims to democratize AI. No-code AI means using a no-code development platform with visual, code-free and often drag-and-drop interface to deploy AI and machine learning models. No code AI solutions are focused on helping **non-technical users build ML**. No Code AI systems work by essentially fine-tuning **powerful pre-trained AI algorithms**.

Low-code simply stands for a reduced amount of coding. A lot of elements can be simply dragged and dropped from the library. However, it is also possible to customize them by writing your own code, which gives increased flexibility

AutoML solutions are focused on **empowering data scientists** to be more efficient. They provide transparency on the whole machine learning pipeline which increases complexity but also allows data scientists to refine how models are built.

Key Products

- **No Code AI Platforms**
- **No Code AI Tools**
- **No Code AI Builder**
- **AutoML**

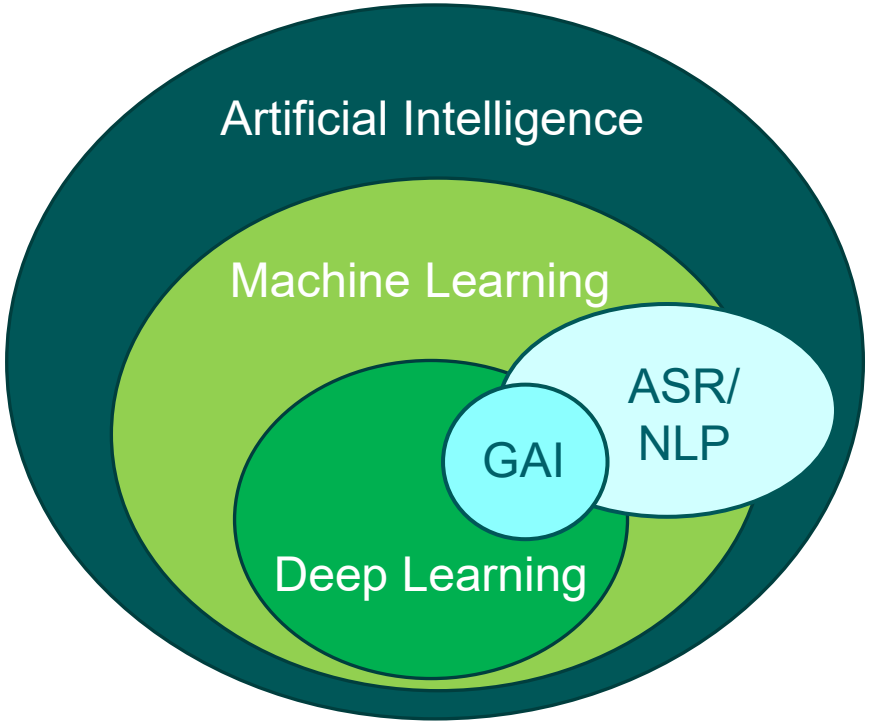
TD SYNNEX Vendors	Product Name
Alteryx:	Machine Learning, Designer, Intelligence Suite
Microsoft:	Lobe.ai, AI Builder
Amazon SageMaker:	AutoML
IBM:	Watson AutoAI
Hitachi Vantara:	AutoML Toolkit
HPE:	Ezmeral MLOps
Google:	Cloud AutoML
Domino Data Labs:	Driverless AI
Oracle:	Enterprise MLOps Platform Oracle Data Science Cloud Service

Other Vendors	Product Name
DataRobot:	DataRobot
Dataiku:	Dataiku
C3.ai	C3 AI Suite
Levity:	Clarif.ai
Clarifai:	Create ML
Apple:	AutoML
PyCaret:	PyCaret
BigML:	BigML

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What is Generative AI (GAI)

Generative AI is a subfield of artificial intelligence (AI) that involves the use of machine learning (ML) models to generate new data that is similar to the training data. It is different from other AI techniques that are designed to process and analyze input. For example, natural language processing (NLP) is designed to process human language while generative AI creates new output.



GAI can be used in various applications such as automatic speech recognition **(ASR)** and natural language processing **(NLP).** In ASR, generative models are used to transcribe speech into text, and used to create natural-sounding, grammatically correct human language.

Use Cases for Foundation Models*

NLP	Text Generation, Q&A, Summarization, Search Classification, Entity Extraction, Intent Recognition, Translation, Rewrite, Text to Speech
Computer Vision	Text to Image, Image Classification, Object Detection, Video Classification, Image to Text
Software Engineering	Text to Code, Code Completion
General Sciences & Others	Drug Discovery, Genomic Sequencing, Chemical Formulation Human-Robot Interaction

*Generative AI foundation models refer to large-scale, pre-trained deep learning models. These models serve as a foundation for various generative tasks, such as text generation, image synthesis, music composition, and more

To access a more technical explanation of Deep Learning click on the following Link: Introduction to Generative AI

Generative AI Models

Generative AI models are capable of generating various types of content, including text, images, music, and even video. These models learn from large datasets to understand patterns, relationships, and features within the data and then use that knowledge to create new examples that have similar characteristics. Generative AI can be applied extensively across many areas of the business. It can make it easier to interpret and understand existing content and automatically create new content.

Generative AI Industry Use Cases

- Implementing chatbots for customer service and technical support
- Deploying deepfakes for mimicking people or even specific individuals
- Improving dubbing for movies and educational content in different languages
- Writing email responses, dating profiles, resumes and term papers
- Creating photorealistic art in a particular style
- Improving product demonstration videos
- Suggesting new drug compounds to test
- Designing physical products and buildings
- Optimizing new chip designs

Generative AI has the potential to revolutionize various industries by automating content creation, enhancing creativity, and enabling the generation of realistic and diverse data. However, ethical considerations, such as responsible use and potential misuse, should also be taken into account as these technologies advance.

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Large Language Models (LLMs)

Large language models (LLMs) are the underlying technology that has powered the rapid rise of generative AI chatbots. Tools like ChatGPT, Google Bard, and Bing Chat all rely on LLMs to generate human-like responses to your prompts and questions. From a high level, an LLM is a massive database of text data that can be referenced to generate human-like responses to your prompts. The text comes from a range of sources and can amount to billions of words.

Many of the most prominent tools today are large language models (LLMs) and/or content generation tools. Below are some of the top generative AI tools in the LLM category

Tool	Company	Use Case(s)
GPT-4	OpenAI	Large Language Model (LLM)
ChatGPT	OpenAI	Chatbot, Content Generation
AlphaCode	DeepMind (Alphabet)	LLM-Powered Coding
GitHub Copilot	Microsoft/GitHub/OpenAI	Code Generation
Bard	Google (Alphabet)	Chatbot, Content Generation
Cohere Generate	Cohere	Large Language Model (LLM), content Generation

LLMs have two main use-cases: Generative and Predictive

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Generative Adversarial Network (GAN)

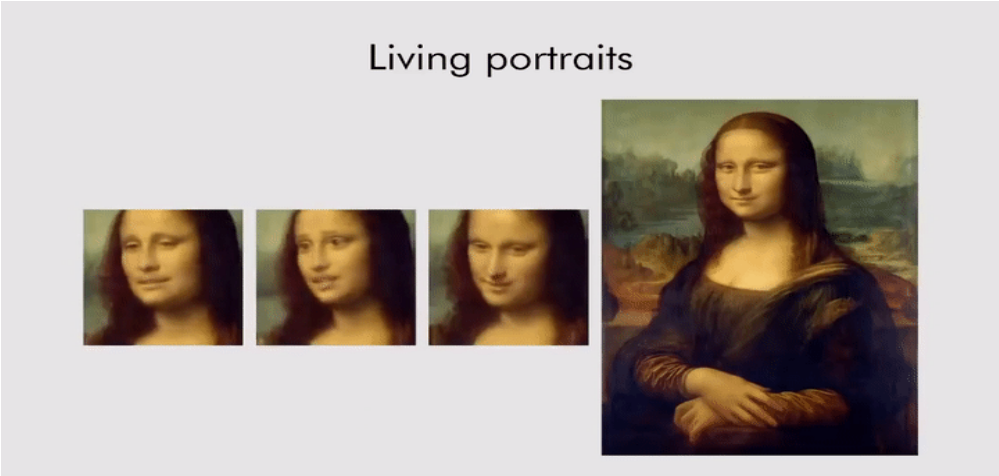
A generative adversarial network (GAN) is a machine learning (ML) model in which two neural networks compete with each other by using deep learning methods to become more accurate in their predictions. GANs use two neural networks and pit one against the other, (hence the term 'adversarial') to generate synthetic and new instances of data that you could pass for real data. They are widely used in image generation, voice generation, and video generation. For example, a GAN trained on photographs can generate new photographs that look at least superficially authentic to human observers.

GANs are becoming a popular ML model for online retail due to their ability to understand and recreate visual content with increasingly remarkable accuracy. Use cases include:

- Filling images from an outline
- Generation of a realistic image from text
- Produce photorealistic renderings of product prototypes
- Converting black and white images to color

In video production, GANs can be used to:

- Model patterns of human behavior and movement within a framework
- Predict subsequent video frames
- Create a deep fake



GAN generated living Mona Lisa

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Generative AI

- Generative AI has many applications such as advertising, marketing, gaming, healthcare, surveillance, media, and education. It can generate speech from text, music tracks, and credible writing in seconds. It can also be used to create images and serve as a tool for instructors in the creation of course material.
- Generative AI can be used in many ways such as implementing chatbots for customer service and technical support, deploying deepfakes for mimicking people or even specific individuals, improving dubbing for movies and educational content in different languages, writing email responses, dating profiles, resumes and term papers, creating photorealistic art in a particular style, improving product demonstration videos.
- Generative AI content can be created for personal or business use and can take the form of text, images, video, audio, synthetic data, and object models. The most prominent instances of generative AI today are generative language modeling, writing, and imagery tools, such as ChatGPT.
- Generative AI models are likely to become an essential tool for developers with their ability to write, debug, and optimize code. They have already begun to transform the way code is written, reviewed, and improved. Using generative AI, software developers can increase their productivity, write better code, and meet high user expectations.

Key Products

- **Generative AI Capabilities Tools**
- **Text Generation Tools**
- **Image Generation Tools**
- **Music Generation Tools**
- **Code Generation Tools**
- **Voice Synthesis Tools**

TD SYNNEX Vendors	Product Name
Kore.ai	XO Platform
Alteryx:	AiDIN
Microsoft:	Copilot
Amazon SageMaker:	Bedrock
IBM:	Watsonx.ai
Nvidia	Nvidia AI Foundations
Google:	Product Studio
Domino Data Labs:	Ray 2.0
Chooch:	ImageChat

Other Vendors	Product Name
Open AI:	ChatGPT, Dall-E2
Jasper AI:	Jasper AI
Cohere	Generate
Codex:	CodeStarter
Simplified:	AI Writer
GitHub:	Copilot
Mostly AI:	Synthetic Data
Stability AI:	Stable Diffusion

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AI Application Software

An AI application uses artificial intelligence to perform tasks that a human might otherwise do

AI applications are process and industry applications that automatically learn, discover, and make recommendations or predictions. The functionality for AI applications may span a variety of areas including finance, sales, risk management, R&D, procurement, HR, marketing, performance management, anti–money laundering, patient outcomes, etc. These applications use natural language processing, search, and machine learning to provide expert assistance in a wide range of areas. AI applications can be AI–centric applications or AI noncentric applications.

- **AI-centric applications** are AI applications or modules where AI technologies are central and critical to the function of the application, and if you eliminate the AI technologies, the application will cease to exist. They need to have some sort of machine learning and some sort of user/data interaction (NLP/NLG, Q&A processing, image/video analytics, computer vision, etc.) or knowledge representation capability. AI applications have an SKU, and their revenue can be tracked and reported.
- **AI noncentric applications** are where AI is being infused/embedded into various business applications (ERP, CRM, SCM, HCM, etc.) — where AI technologies are integral to certain workflows of the application, but if those technologies were removed, the application would still be able to function. They have either machine learning or user/data interaction or knowledge representation capability. Also, they do not have an SKU.

AI Centric
Salesforce
Adobe
OpenText
TOTVS
Hyland Software
SAS
Sprinklr
Oracle
Ceridian

AI Noncentric
Microsoft
Adobe
Google
Workday
Zoom
Oracle
Synopsys
Intuit
Optum

Significant Market Developments

Major developments in the artificial intelligence applications market

Low code/no code: Reduce development and deployment times and improve communication and coordination between data scientists and business analysts by using low-code/no-code solutions

Embedded AI applications/solutions: To add an extra layer of intelligence to their technology stacks, major technology providers are incorporating AI. This is crucial in assisting firms in reducing the time it takes to realize value and in filling the resulting skill gap.

AI-infused operations: AI-infused processes will be mature, trusted, and proven to drive positive results by 2026. 75% of large organizations will rely on AI-infused processes to shift to digital-first operations. AI will streamline supply chains, improve product quality, and transform the healthcare industry. IT departments will need to work closely with line-of-business leads to add new AI-infused use cases. Digital infrastructure to support AI-infused processes may have specific requirements such as GPUs or HPC, location, and environment considerations.

Multimodal AI: Multimodal AI is a new AI paradigm in which diverse data types (such as image, text, speech, video, and numerical data) are combined with multiple intelligence processing algorithms to achieve greater performance. Multimodal AI posits that by utilizing a variety of data modalities, we are able to better understand and analyze information dynamically, thereby simulating human intelligence.

Large language models (LLMs): Over the past few years, AI research organizations have been experimenting with large language models. These models go beyond the NLP and AI models that organizations may be using in production such as Google's bidirectional encoder representation from transformers or BERT to handle natural language understanding tasks. Other types of models are being used for AI-based image generation, such as DALL-E, which is based on millions of images and text associated with those images. LLMs are beginning to change the way researchers think about machine learning models as they require training through the ingestion of substantial amounts of data, which may be unstructured text, images, or even video. IDC believes that only the largest vendors will be able to afford the significant costs of collecting data and training of these LLMs, and that those vendors will license the use of them to both consumers and enterprises.

Sustainable AI: AI has made significant progress in assisting in the resolution of the world's most pressing issues including disease identification, assisted transportation, and accessibility solutions. To support a greater number of tasks and/or improve the model's overall accuracy, AI models require an enormous number of layers, and these costs will become a significant issue in the future. Organizations that develop and deploy AI at scale should consider how to incorporate this cost-benefit analysis into AI governance.

Advice for Technology Suppliers

Adopting Embedded AI technology will continue to be essential for businesses seeking a competitive edge in today's fast-paced environment

- **Know your target audience:** Understand the needs, pain points, and organizational objectives of your intended audience. Customize your AI applications to fulfill these specific needs.
- **Offer proof-of-concept trials:** Invite prospective clients to test out your AI applications through proof-of-concept trials or pilot programs so they can see how they can benefit their organization before committing fully.
- **Develop alliances with key opinion leaders:** Collaborate with industry influencers, thought leaders, or existing clients that have effectively implemented AI applications within their organizations. Their recommendation can have a significant impact on others' decisions to implement similar technologies.
- **Measure return on investment (ROI):** Help end users quantify the value they receive from implementing your AI applications by providing them with tools or analytics dashboards that monitor key performance indicators (KPIs) directly impacted by your software.
- **Continuously enhance functionality based on user feedback:** Regularly collect user feedback and incorporate their suggestions into software updates. This iterative strategy will demonstrate your dedication to continuous enhancement and responsiveness to user requirements.

TD SYNNEX Enterprise AI & ML Vendors

1. **Artisight** is a purpose-built IoT-enabled AI platform using smart cameras. Target mid to large hospital enterprises for computer vision/AI/ML. (Algorithms include: Patient falls, smart telemonitoring, telesitting, OR coordination, bed management, surgical improvement, clinic coordination, and smart patient wayfinding.

2. **Alteryx Analytics** provides data scientists with a **machine-learning platform** for building models in a workflow. Alteryx's product vision aims at helping companies in cultivating a data analytics culture without necessarily hiring data scientists. Automate every step of analytics, including data prep, blending, reporting, predictive analytics, and data science. Access any data source, file, application, or data type, and experience the simplicity and power of a **self-service platform** with 300+ automation building blocks.

3. **Chooch** is a complete AI platform that produces end-to-end deployments for the cloud and edge devices, from data collection to AI training, to deployment and management of AI models. The Chooch AI platform provides not only AI models, but flexible, complete solutions across industries, including geospatial, security, media, healthcare, retail, and workplace safety. AI models are packaged with applications and are installed remotely on leading-edge devices to provide fast, accurate edge AI in minutes.

4. **Domino Data Labs,** according to Gartner, is the only holistic data science & MLOps solution on the market. Data scientists use this to help them develop and deploy their own data science and machine-learning solutions Domino automates the DevOps activities required to optimize the utilization of the powerful NVIDIA DGX hardware. Domino Data Lab's Nexus hybrid and multi-cloud MLOps architecture makes it possible to rapidly scale, control, and orchestrate data science workloads across different compute clusters.

TD SYNNEX AI & ML Vendors

5. **Run.ai** optimizes your AI infrastructure by pooling GPUs into a single virtual layer and automating workload scheduling for 100%utilization. Visualizes every aspect of your AI journey, from infrastructure to model performance giving every user insights into the health and performance of the AI workloads.

6. **NVIDIA's** AI developers have seen the value in the GPU's massively parallel processing design and embraced Nvidia GPUs for machine learning and artificial intelligence. Nvidia AI Enterprise is an end-to-end AI software suite with AI frameworks and tools that provide performance-optimized deep learning, machine learning, and data science tools that simplify building, sharing, and deploying AI software. Runs on NVIDIA-Verified servers, and the public cloud.

7. **AWS** offers the broadest and deepest set of machine learning services and supporting cloud infrastructure, putting machine learning in the hands of every developer, data scientist, and expert practitioner. AWS is helping more than one hundred thousand customers accelerate their machine-learning journey.

8. **Microsoft** also maintains its presence in the data science and machine -learning markets through its Azure software products. These products include Azure Machine-learning (including Azure Machine-learning Studio), Power BI, Azure Data Lake, Azure HDInsight, Azure Stream Analytics, and Azure Data Factory. Its cloud-based Azure Machine-learning Studio is ideal for data scientists who want to build, test, and execute predictive analytics solutions on their data.

TD SYNNEX AI & ML Vendors

9. **Intel OpenVINO™** toolkit is a comprehensive toolkit for quickly developing applications and solutions that solve various tasks, including emulation of human vision, automatic speech recognition, natural language processing, recommendation systems, and many others. The toolkit extends computer vision and non-vision workloads across Intel® hardware, maximizing performance. It accelerates applications with high-performance, AI, and deep learning inference deployed from edge to cloud.

10. **IBM data science** solutions empower your business with the latest advances in AI, machine learning, and automation to support the full data science lifecycle, from preparing and exploring data to building, deploying, managing, and monitoring models. Use IBM data science software on IBM Cloud Pak® for Data, a containerized data, and AI platform, to build and run models anywhere on any cloud and on-premise.

11. **Oracle Data Science Cloud Service** enables data scientists to build, train and manage machine learning models on Oracle Cloud using an open-source Python ecosystem enhanced by Oracle for automated machine learning (AutoML), model evaluation, and model explanation.

12. **Pentaho Machine Learning ML Orchestration** is a platform from Hitachi Vantara that streamlines your entire machine learningworkflow and enables teams of data scientists, engineers, and analysts to train, tune, test, and deploy predictive models.

TD SYNNEX Generative AI Vendors

1. **Microsoft Copilot** is an AI-powered tool designed to manage diverse business tasks. It leverages the latest advancements in generative AI to automate tasks and free up the workforce's full potential for creativity. Copilot combines the power of large language models (LLMs) with your data in the Microsoft Graph as well as your calendar, emails, chats, documents, meetings, and more. The Microsoft 365 apps to turn your words into the most powerful productivity tool on the planet.

2. **Alteryx AiDIN** is an AI engine that infuses the power of generative AI & Machine Learning (ML) across the Alteryx Analytics Cloud Platform. Alteryx AiDIN combines the intuitive and powerful nature of generative AI with the trusted, secure and enterprise-grade capabilities of the Alteryx Analytics Cloud Platform and is built to help anyone accelerate intelligent decisions across the enterprise.

3. **Kore.ai (XO) Platform** is secure, scalable, and optimizes customer and employee experiences via voice and digital channels. The platform employs generative language models to build intelligent virtual assistants (IVAs) 5x faster with 3x fewer operational efforts.

4. **Amazon Bedrock**, the cutting-edge platform for generative AI, provides seamless integration with Amazon SageMaker, the comprehensive machine learning platform from AWS. This integration amplifies the capabilities of Bedrock, making it a powerful tool for training and deploying generative AI models at scale.

5. **IBM Watsonx.ai** brings together new generative AI capabilities, powered by foundation models, and traditional machine learning into a powerful platform spanning the AI lifecycle. With watsonx.ai, you can train, validate, tune, and deploy models with ease and build AI applications in a fraction of the time with a fraction of the data. General availability of watsonx.ai is expected in July.

6. **NVIDIA AI Foundations** is a set of cloud services that advance enterprise-level generative AI and enable customization across use cases in areas such as text (NVIDIA NeMo™), visual content (NVIDIA Picasso), and biology (NVIDIA BioNeMo™).

7. **Domino Data Labs Ray 2.0** makes it easy to access the volume and types of data, including image/video for computer vision, natural language processing (NLP) for **generative AI** like Chat GPT, and signal processing for IoT. Domino's powerful infrastructure and reproducibility engine empowers data science teams to increase productivity and collaboration.

Modern Data Platforms

A Modern Data Platform is a future-proof architecture for Business Analytics. It is a functional architecture which has all components to support a Modern data warehousing, Machine Learning and AI development. Real-time **data** ingesting and processing. Data platforms include data storage, servers and data architecture.

TD SYNNEX Modern Data Platform Vendor

Cloudera is a modern platform for machine learning and analytics optimized for the cloud. Cloudera is a multi-environment analytics platform powered by integrated open-source technologies that help users glean actionable business insights from their data, wherever it lives. An enterprise data cloud, puts data management at analysts' fingertips, with the scalability and elasticity to manage any workload.

Other Modern Data Platform Vendors

Snowflake is a cloud data platform that supports a multi-cloud strategy, including a cross-cloud approach to mix and match clouds as needed. Snowflake is available globally on AWS, Azure, and Google Cloud Platform. Snowflake Cloud Data Platform combines the power of data warehousing, the flexibility of big data platforms, the elasticity of the cloud, and live data sharing at a fraction of the cost of traditional data platform solutions.

Databricks uses cutting-edge, open-source technology based on years of research to build next-generation software for analyzing and extracting value from data. Databricks consolidates all data workloads, across both analytics and AI, on a single platform.

Components of AI

Applications

Image Recognition[1]

Natural Language Processing[2]

Chatbots

Sentiment Analysis[3]

Categories

Machine Learning

Deep Learning

Programming Languages & Frameworks for Building Models

Python, C/C++, Java, Go ..

TensorFlow, Pytorch, Keras, Caffe, Scikit-learn (AI Frameworks)[4]

OpenVINO, TensorRT (AI Inference)[5]

Software/Hardware for Training & Running Models

GPUs, VPUs[6], TPUs[7]

Parallel Processing Tools (like Spark[8])

Cloud Data Storage and Compute Platforms

1. Image recognition is a term for computer technologies that can recognize certain people, animals, objects or other targeted subjects through the use of algorithms and machine learning concepts
2. Natural language processing (NLP) Natural language processing is a subfield of linguistics, computer science, and artificial intelligence concerned with the interactions between computers and human language, in particular how to program computers to process and analyze large amounts of natural language data.
3. Sentiment analysis studies the subjective information in an expression, that is, the opinions, appraisals, emotions, or attitudes towards a topic, person or entity. Expressions can be classified as positive, negative, or neutral. For example: "I really like the new design of your website!" → Positive.
4. AI framework allows for easier and faster creation of artificial intelligence applications
5. AI Inference applies knowledge from a trained neural network model and a uses it to infer a result
6. Vision Processing Unit (VPU) is a type of microprocessor aimed at accelerating machine learning and artificial intelligence technologies. It is a specialized processor that is made to support tasks like image processing
7. Tensor Processing Units (TPUs) are Google's custom-developed application-specific integrated circuits (ASICs) used to accelerate machine learning workloads
8. Apache Spark is a lightning-fast unified analytics engine for big data and machine learning. Spark uses Resilient Distributed Datasets (RDD) to perform parallel processing across a cluster or computer processors.

Some Industry Specific Uses of AI

Healthcare

AI is used for image analytics and to analyze vast troves of patient data to uncover patterns and insights that humans can't find on their own. Other AI tools help clinicians develop customized patient treatment plans and personalized medicine.

Smart City / Public Sector

AI is used for public safety and surveillance as well as smart parking and improved traffic control. AI is also used for smart street lights, smart buildings and smart energy metering and more.

Industrial/Manufacturing

AI is used to monitor machines for predictive and prescriptive maintenance. AI is also use for video analytics, worker safety and to increase operational efficiency.

Retail

AI is used for video surveillance to identify shopping patterns as well inventory demand forecasting and management. AI is also used for product bundling and pricing strategy.

Financial Services

AI is used for fraud detection to make near instantaneous decisions. AI is also used for wealth management, loan approvals and trading decisions among other financial services.

Transportation

AI is enabling self-driving vehicles that get smarter as they gain navigation experience. AI is also used to improve traffic management and transportation logistics.

How to Identify an AI Opportunity

Clients may already be working on AI/ML projects within different departments typically led by data scientists, analysts and possibly IT specialist within the organization.

Following are some of the related phrases/topics, you should look out for during your conversations:

- Get value out of Big Data
- Digital transformation
- Internet of Things (IoT)
- Deploy intelligence at the edge
- Automate translation, diagnosis, and others
- Speech recognition
- Natural Language Processing (NLP)
- Virtual digital assistant
- Video analytics/facial recognition
- Predictive analytics

Some Industry Specific Uses of Generative AI

Healthcare

Generative AI has the potential to accelerate the transformation of an entire industry. AI can demystify complex patient diagnoses, provide timely and insightful information while reducing administrative burden for physicians, and improve the accuracy and speed of insurance claims.

Smart City / Public Sector

Generative AI can be used in the public sector to improve education, enhance public safety and transportation, and revolutionize how we address challenges. In the smart cities/utilities sector, AI and ML can be used for smart energy metering, traffic management, public transportation, waste management, and more.

Industrial/Manufacturing

Generative AI can be used in manufacturing to optimize production processes, improve quality control, and reduce waste. It can also be used for predictive maintenance.

Retail

Generative AI can be applied to retail to improve demand forecasting and inventory management, create personalized shopping experiences for customers, automate tasks and scale critical work for brands and retailers. It can also be used for virtual try-on, visual search, chatbots and virtual assistants, pricing and promotion optimization

Financial Services

Generative AI has the potential to revolutionize financial services specifically in the payments, banking, and insurance sectors. The most promising use cases exist in personalized marketing and experience, process automation, fraud defense, risk assessment, customer success, etc. Generative AI can be used to empower contact centers and advisors by summarizing conversations and getting insights across various conversations

Transportation

Generative AI can accurately convert satellite images into map views, enabling the exploration of previously unknown locations. It can also help with face identification and verification systems at airports by creating a full-face picture of a passenger from from different angles. Artificial intelligence systems predict and reduce traffic congestion and improve road safety.

Generative AI Prospecting

Prospecting a generative AI sales opportunity

1. Identify industries or sectors where generative AI can bring significant value

2. Identify specific pain points within the target industry that can be addressed by generative AI.
   Look for challenges such as:
   - High production costs,
   - Time-consuming manual processes
   - Lack of innovation
   - The need for personalized content

3. Explore potential use cases for generative AI within the industry

4. Investigate whether competitors or similar companies within the industry are already utilizing or exploring generative AI solutions

5. Assess the availability and quality of data required and ensure that the prospect has access to relevant data sources or the capability to collect and curate such data

6. Consider the scalability of the generative AI solution and its potential for integration with existing systems or workflows
   - A solution that can seamlessly integrate into the prospect's infrastructure is more likely to be well-received

7. Determine the potential ROI for the prospect and understand how the solution can drive cost savings, improve efficiency, enhance customer experiences, or generate new revenue streams

8. Be aware of any ethical concerns associated with generative AI in the specific context

9. If possible, propose a proof of concept (PoC) to demonstrate the capabilities and benefits of generative AI

10. Lastly, assess the potential for a long-term partnership with the prospect. Consider their willingness to collaborate, invest in AI initiatives, and embrace technological advancements.

Definitions

- **Offline Reporting:** is a small software locally installed on your PC/Mobile device, designed to easily create reports based on account information downloaded daily.

- **Hyper Automation:** the application of advanced technologies like **RPA, Artificial Intelligence**, **machine learning,** and Process Mining to augment workers and automate processes in ways that are significantly more impactful than traditional automation capabilities. (**Process mining** is an analytical discipline for discovering, monitoring, and improving **processes** as they actually are (not as you think they might be), by extracting knowledge from event logs readily available in today's information systems).

- **Modern Data Warehouse** allows you to combine all kinds of data, at any scale, and easy to get business intelligence insights through dashboards, visualization tools as well as advanced analytics for all your users.

- **Unified Data Management** consolidates the data sources to create a single data narrative within a data warehouse. The resources, data model, and usage are defined to access the subscription data through the Unified Data Repository services.

- **Business Process Automation:** also known as business automation or **digital transformation**, is the technology-enabled automation of complex business processes.

- **Data Virtualization** can efficiently bridge data across data warehouses, data marts, and data lakes without creating a whole new integrated physical data platform.

Definitions

- **Real-time Dashboard** is used to track, analyze, and report on data in real-time with the help of data visualizations. It is automatically updated and grants instant access to valuable data.
- **Embedded analytics** integrates analytic content and capabilities within applications, such as business process applications (e.g. CRM, ERP, EHR/EMR).
- **Data insights** refers to the understanding of a particular business phenomenon you can achieve by using machine learning and artificial intelligence (AI) technology to analyze a dataset.
- **AI-Driven Insights.** Dive deep into the analysis of your customer journey and derive actionable insights to continuously improve your collections process.
- **Data collaboration** is the practice of using **data** to enhance partnerships, alliances, go-to-market efforts, and strategic initiatives. Anytime two companies combine their **data-driven** insights to create new value, you're seeing **data collaboration** in action (MS Teams).
- **AIoT** is a term that has cropped up recently to describe the convergence of **IoT** and AI systems on a shared goal: generating useful data about the world (IoT) and drawing insights from those data.
- **Database replication** is the frequent electronic copying of data from a **database** in one computer or server to a **database** in another.

Definitions

- **DaaS** is a **means** of providing cloud-based workspaces to employees. The technology [makes] uses of the physical terminal, [such as a laptop, PC or tablet], to communicate with the workspace hosted by the company's cloud provider.

- **IoT-Condition Monitoring** enables product quality control by detecting combinations of equipment **health**, such as spindle **vibration** frequency, engine temperature, cutting speed, and ambient parameters, such as temperature and humidity.

- **Generative AI** is a category of AI algorithms that use neural networks like large language models (LLM) and other models like Generative Adversarial Networks (GAN) and Transformers to generate new outputs based on the data they have been trained on. Unlike traditional AI systems that are designed to recognize patterns and make predictions, generative AI creates new content in the form of images, text, audio, code, and more. “Deep fakes” are an example of generative AI: they are images, video and/or audio that are generated by the AI engine. Generative AI requires significantly more computing power and data than traditional AI due to the complex algorithms and models involved in creating new data.

- **Generative AI Capability Tools .** These tools can generate speech from text, music tracks, and credible writing in seconds. They can also be used to create images and serve as a tool for instructors in the creation of course material. Alteryx AiDIN is a generative AI capability tool.

- **Text generation tools** refer to software or applications that utilize generative AI models or algorithms to automatically produce written content. These tools can generate text based on various inputs, such as prompts, keywords, or predefined templates, and they aim to create coherent and contextually relevant output that resembles human-written text.

Definitions

- **Image generation tools** are software or applications that utilize generative AI models or algorithms to automatically create new images. These tools generate images based on various inputs, such as random noise, semantic descriptions, or existing images, and aim to produce visually appealing and coherent output that resembles real-world images

- **Music generation tools** refer to software or applications that utilize generative AI models or algorithms to automatically compose or generate new musical pieces. These tools aim to create original music that resembles compositions made by human musicians

- **Code generation tools** are software or applications that automate the process of generating source code or programming scripts. These tools assist developers in creating code snippets, templates, or even complete software modules, reducing manual coding efforts and enhancing productivity

- **Voice synthesis tools**, also known as text-to-speech (TTS) systems, are software or applications that convert written text into spoken audio. These tools utilize artificial intelligence and speech synthesis techniques to generate natural-sounding human voices from written text.

Learn More



On the Web

Learn more about TD SYNNEX's Data, AI, and IoT offerings at:

Data AI & IoT
Destination AI



Contact Us

Reach out to your Analytics and IoT solution consultant, or email us at:
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Dive Deeper

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