ARTIFICIAL **INTELLIGENCE**

Your Guide to AI Technologies

WIZELINE

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GUIDE

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Introduction

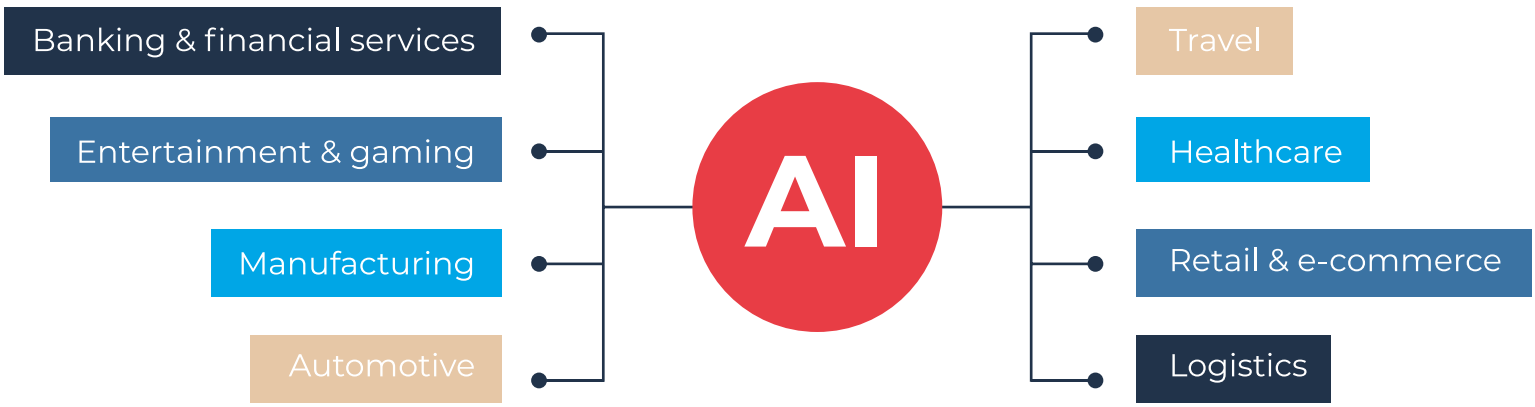
It is no secret that Artificial Intelligence (AI) has deeply instilled itself into our society. From completing our sentences through automated suggestions to drone-delivered packages from Amazon, AI has exhibited its revolutionary, innovative potential for helping to maximize efficiency in several areas of our lives.

AI's innovations have also advanced the world of business across many industries. It has expanded the possibilities for how companies approach real-time engagement with their customers, manage their operations, and ensure business continuity, especially through the pandemic. As the technology advances, businesses are finding new ways to leverage it in their innovation and expansion plans. According to Statista, the global AI market is predicted to snowball in the next few years, reaching a USD 190.61 billion market value in 2025.

This guide explores how key industries are leveraging AI and the underlying technologies used to make some of these innovations possible.

AI Applications Across Major Industries

AI offers several opportunities to increase business value. If implemented correctly, it can help optimize operations, improve overall sales and utilize the workforce more efficiently. That's why AI technologies are popular in many industries across the globe.



AI Applications in Healthcare

The healthcare industry has significantly benefitted from AI after being hurt by poor processes and rising costs. AI is applied for a wide range of healthcare services, including safeguarding private records, data mining for identifying patterns, more accurate diagnosis, robot-assisted surgeries, medical imaging, medication management, drug discovery, and more. An outstanding example of AI in healthcare is its ability to diagnose pathology. Machine learning technology is used to assist pathologists in making more accurate diagnoses, reduce errors in cancer diagnosis, and develop methods for individualized medical treatment.

AI Applications in Travel

In the travel industry, AI has become a mega-trend since it saves businesses time and money while potentially eradicating human error and allowing tasks to be performed swiftly, at any time of the day. Companies in the hospitality space rely heavily on delivering excellent customer service to build their reputation, and AI technology can assist with this in various ways. For example, artificial intelligence can improve personalization, tailor recommendations, and guarantee fast response times, even in the absence of staff. Furthermore, machine learning and predictive analytics can help travel companies boost their conversion rates by identifying customer behavior and purchasing patterns.

AI Applications in Retail & E-commerce

Most end-users in the e-commerce space would have interacted with AI in their customer journey at least once. Being a highly competitive space, retail businesses quickly leverage AI technology to find patterns in consumer behavior and align their strategy to outsmart their competitors.

And the benefits are endless. From increased revenue and accelerated growth to stronger customer relationships, we can only expect more retail businesses to implement AI technologies in the future.

Amazon, one of the largest e-commerce companies, has incorporated AI into almost every step of its customer life cycle and other processes. From highly personalized shopping to voice-enabled search, Amazon has leveraged machine learning and other AI technologies to gain a competitive edge in this industry.

AI Applications in Logistics

For logistics operations, AI has been a game-changer. A report by McKinsey predicts that AI will create an entirely new "logistics paradigm" by 2030 as it continues to outperform humans at repetitive but mission-critical tasks. The use of machine learning and predictive analytics has already transformed supply chain management, making it a seamless process. Many warehouses use AI-powered robots for sorting and packaging products in warehouses. Furthermore, AI algorithms are also increasingly used to find the shortest shipment route and support last-mile delivery.

AI Applications in Banking & Financial Services

The Banking and Financial Services industry is undergoing a tremendous transformation due to the onset of AI applications. The critical factors driving the financial sector are real-time data reporting, accuracy, and data processing in large volumes. AI is perfect for these jobs, which is why the finance sector is implementing machine learning, adaptive intelligence, chatbots, and automation in their financial processes.

In many scenarios, human agents are supplemented with intelligent software robots for tasks like loan processing and customer service. Similarly, Robo-financial advisors are sifting through multiple levels of data in split seconds to recommend the right investment decisions for customers. Another essential application of AI in the finance sector is fraud detection. Credit card companies are using machine learning software and advanced predictive analytics to decrease false positives in their fraud detection workflows, reducing customer inconveniences and amplifying profitability.

AI Applications in Entertainment & Gaming

In the entertainment industry, AI is helping entertainment companies like Netflix and HBO provide more personalized service and improve customer experience by identifying which shows or programs to recommend to individual users based on their activity.

In the film industry, AI is employed to enhance movies' digital effects, save costs, and speed up the pre and post-production process. For example, Natural Language Processing (NLP) is used to structure a script for storyboarding, or data is used to arrive at an optimal schedule for filming.

In the music industry, large companies like Apple and Spotify use AI to understand engagement patterns and recommend the right music to users at the right time.

The gaming industry was one of the early adopters of AI, and its impact on the user experience has been profound. Among several applications in gaming, AI is used to control the actions of non-player characters (NPC) that play a role in advancing the game's storyline in a specific direction. AI-driven behavior modeling of such characters greatly enhances the gamer's experience in the overall storyline.

AI Applications in Automotive

AI is utilized in numerous ways in the automotive industry. From product development and customization to optimizing the in-vehicle experience, AI is fueling a new generation of smarter cars. At the same time, self-driving vehicles are undoubtedly the next big thing. Although they are still in the research and trial stage in many countries, AI-based self-driving will potentially replace manual driving and make roads safer. Tesla, Uber, Volvo, and Volkswagen are at the forefront of this research, analyzing truckloads of data and leveraging AI and data science technologies to improve their creations. Research is also underway to leverage AI algorithms to optimize public transport for scheduling, routing, and even traffic light management.

AI Applications in Manufacturing

In manufacturing, AI is employed across several operation lines, from workforce planning to product design, improving efficiency, product quality, and employee safety. In factories, machine learning is utilized to support the predictive maintenance of critical industrial equipment, helping management take timely measures to restore the equipment and prevent costly unplanned downtime.

Furthermore, many assembly lines have technologies to identify defects across the production line, reducing false positives and saving countless hours required for quality control by on-site staff.

Key Technologies Driving Innovation in AI

We've explored fundamental AI innovations across several industries, but what are the technologies behind these outcomes? This section covers some technologies used to pave the way for AI solutions helping businesses deliver better customer experiences and maximize profits.

Robotic Process Automation (RPA)

Robotic Process Automation (RPA) is helping organizations across multiple industries ranging from financial services to healthcare, manufacturing, retail, and more to streamline workflows, making them more profitable, flexible, and responsive.

Instead of people, software robots do redundant work like moving files and folders, logging into applications and systems, extracting, copying, and inserting data, completing routine analyses and reports, and filling forms. Advanced robots can even perform cognitive processes like interpreting text, engaging in conversations, understanding unstructured data, and applying advanced machine learning models to make complex decisions.

RPA has been around for a long time and is increasingly popular in the world of AI technologies, with Gartner predicting that 90% of large global organizations will have adopted RPA by 2022, and large organizations will triple the capacity of their existing RPA portfolios through 2024.

It's no doubt that when robots perform repetitive, high-volume tasks, humans are free to focus on the things they do best and enjoy more: innovating, collaborating, creating, and interacting with customers, increasing employee satisfaction, engagement, and productivity.

Knowledge Graphs

Knowledge graphs are a compelling way to structure your information database. They are fast becoming an integral part of organizations' data landscapes as they provide a human and machine-readable database of all the things of interest to the enterprise in their domain.

Fueled by machine learning, knowledge graphs utilize natural language processing (NLP) to automatically connect a single metadata allocation on one piece of information to other information with varying contexts, even when it's several logical steps from the original piece of metadata.

While consumer-facing products demonstrate its ability to save time, Knowledge Graphs can also be applied in a business setting, eliminating manual data collection to support business decision-making.

Knowledge Graphs are not new; they've been generating impact for over a decade across several types of businesses, including Google, which uses its Knowledge Graph, a database of billions of facts about people, places, and things, to populate search results. Another example is the Amazon Product Graph used to categorize and showcase products to customers as they search.

Customer Segmentation

Accurate segmentation brings several benefits to a business, including precise budgeting and planning for marketing campaigns, strategic product design, tailored promotion campaigns, and improved customer satisfaction.

When you add AI to data analytics, your customer targeting becomes more accurate, dynamic, and capable of boosting conversions. Powered with machine/deep (ML/DL) learning algorithms, you can thoroughly analyze customer data and generate in-depth results about the targeted segments. You can also use this information to automate personalized campaigns for each group. This approach will yield superior results compared to traditional analytics-driven marketing campaigns. For example, custom AI solutions can eliminate human bias when analyzing data and identify hidden trends and patterns you never thought of before. Businesses also benefit from automatic segment updates that help accurately reflect changes in the marketplace.

There are two types of machine learning-based customer segmentation - supervised and unsupervised.

In the case of supervised ML, the marketer sets the rules first, and ML is used to sort the data based on those rules. For example, you can select options to sort customers by the number of products ordered, average profitability, or average cost.

With unsupervised ML, the algorithm finds different “clusters” based on customer similarities, which may not be evident initially. These clusters tend to be very small, so marketers can better identify specific customer groups, providing more personalized offerings and better targeting. For instance, unsupervised machine learning can recognize the most targeted customer cluster, like those who ordered the most products, spent the most money, or never returned to the site.

Text Mining

Text mining transforms unstructured text into structured data to identify meaningful patterns and new insights. For businesses, the large amount of data generated every day represents both an opportunity and a challenge. On one side, data helps companies get intelligent insights into people's opinions about a product or service. Think about all the potential ideas you could get from analyzing emails, social media posts, product reviews, customer feedback, support tickets, etc. On the other side, there's the dilemma of how to process all this data. And that's where text mining plays a significant role.

Using NLP, text mining enables multiple practical applications to take your business to the next level, including recommending relevant complementary products, fighting cyber fraud, improving personalization, and augmenting the chances of future conversion.

Another use case we've seen is organizations using text mining to optimize the end-to-end customer support process, from automating ticket tagging to routing tickets to the relevant support staff, detecting urgency, and analyzing tickets for customer satisfaction.

Overall, text mining is helping companies become more productive, better understand their customers, and use insights to make data-driven decisions

Predictive Analysis

Predictive analysis is a statistical technique leveraging machine learning and data mining of historical and existing data to predict likely future outcomes. It works by analyzing current and historical data and projecting what it learns on a model generated to forecast potential outcomes. Predictive analysis can help predict varying things, from TV ratings and a customer's next purchase to credit risks and corporate earnings.

Pairing predictive analytics models with AI is crucial in improving forecast accuracy and helping businesses realize a full range of benefits, including inventory optimization, improved delivery times, increased sales, and reduced operational costs. AI is expected to grow to a USD 309 billion industry by 2026, and 44% of executives report decreased operational costs as a direct result of implementing AI.

Inventory management and delivery optimization are key ways businesses leverage predictive analysis, especially in retail industries.

Enterprise-Ready Rankings for Adopting Key AI Technologies

Some of the biggest hurdles businesses face regarding AI adoption include the lack of valuable data, business process challenges, skill shortage, high cost of tools and resources, legal and regulatory risks, proving business value, cybersecurity, and ethics. Some AI technologies easily combat some of these issues, allowing for easier, widespread adoption, while others still need some more maturity before all businesses can leverage them.

Now that we've highlighted the key AI technologies businesses across multiple industries are leveraging to improve service delivery and optimize customer experience, we're taking it one step further to rank these technologies in terms of readiness for adoption.

#1 Robotic Process Automation

The pandemic changed how we work and, in many cases, how businesses operate. Consequently, it has also accelerated the digital transformation process, including automation and thus RPA.

According to Precedence Research, the global robotic process automation market is projected to hit around USD 23.9 billion by 2030, growing at a CAGR of 27.7% from 2021 to 2030. RPA is expected to remain the fastest-growing enterprise technology, with many predicting that it will continue to grow at a robust pace.

One of the main advantages of RPA is automation at a relatively low cost and in a short time. In addition, the implementation and use of software robots are non-invasive, controlling selected infrastructure elements without interfering with existing systems.

#2 Text Mining

Text mining implementation was initially slow to gain traction. Originally, there were only loosely integrated and independent solutions available. Companies often did not quickly see the true value behind sophisticated analytical solutions. We've seen text analytics adoption rates increase, and we expect this trend to continue. The global Text Mining Market is forecast to grow at a rate of 18.1%, from USD 4.75 Billion in 2019 to USD 16.85 Billion in 2027.

Several factors driving the market are a rise in social media analytics, an increase in industry-specific text analysis, the growing penetration of smartphone users worldwide, and the emergence of multilingual text analysis to break language barriers.

The banking, financial services, and insurance sectors have been text mining adopters. Banks increasingly use natural language processing, allowing computers to understand and respond to human language.

#3 Customer Segmentation

Segmentation has been around for quite some time, with marketing teams leveraging this technology to deliver customer personalization. However, with the ongoing changes in technology used for gathering data, new generations of consumers who require highly personalized content, and recent changes in buying behaviors caused by COVID-19, updating the ways of data segmentation has become crucial. We're seeing more small and mid-scale companies join the prominent organizations in using AI customer segmentation, for good reason. Segmented campaigns can bring up to 760% revenue growth for companies, and 77% of marketing ROI comes from segmented and targeted campaigns.

#4 Knowledge Graphs

Knowledge Graph technology globally is experiencing accelerated momentum. Gartner, amongst other analysts, has anticipated that applications using knowledge graphs will grow 100% throughout 2022, and up from 4% adoption, we are likely to hit 30% adoption. Organizations need to consider and adopt graph technology to take advantage of the possible competitive advantage by being early adopters.

#5 Predictive Analysis

Predictive analytics is still a young and developing technology, meaning there is much more to come. As techniques, methods, tools, and technologies improve, so will the benefits to businesses.

However, this is not a technology organizations can afford to adopt later, after the tech reaches maturity and all the kinks are worked out. The near-term advantages are too substantial for a late adopter to overcome and remain competitive.

The predictive analytics market is expected to reach a notable CAGR of 24.9% in 2030. The increase in performance and reduced risks expected to be taken due to the ability to make more well-informed decisions with predictive analytics are some factors that positively affect the market.

How Can **Wizeline** Help

Organizations across the spectrum, from big companies such as Amazon, Google, and Salesforce, to innovative start-ups, integrate AI as an intelligence layer across their entire tech stack. Advancement in Machine Learning, Deep Learning, and Natural Language Processing (NLP) makes integrating an AI algorithm layer into the software or platform easier. Organizations are also combining multiple AI technologies to optimize varying company processes and meet business goals.

Wizeline's Intelligence Everywhere offering brings AI at scale, connecting core business processes with data services that continuously grow and improve. We help you re-architect your data platforms and bring artificial intelligence services at scale to increase revenue, improve business efficiency, and cut down on manual processes.

Learn more about how we work with you to mature your data-driven capabilities by building next-generation data platforms and enabling machine learning and automation here, or contact us at consulting@wizeline.com to get started.

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