



InData Labs

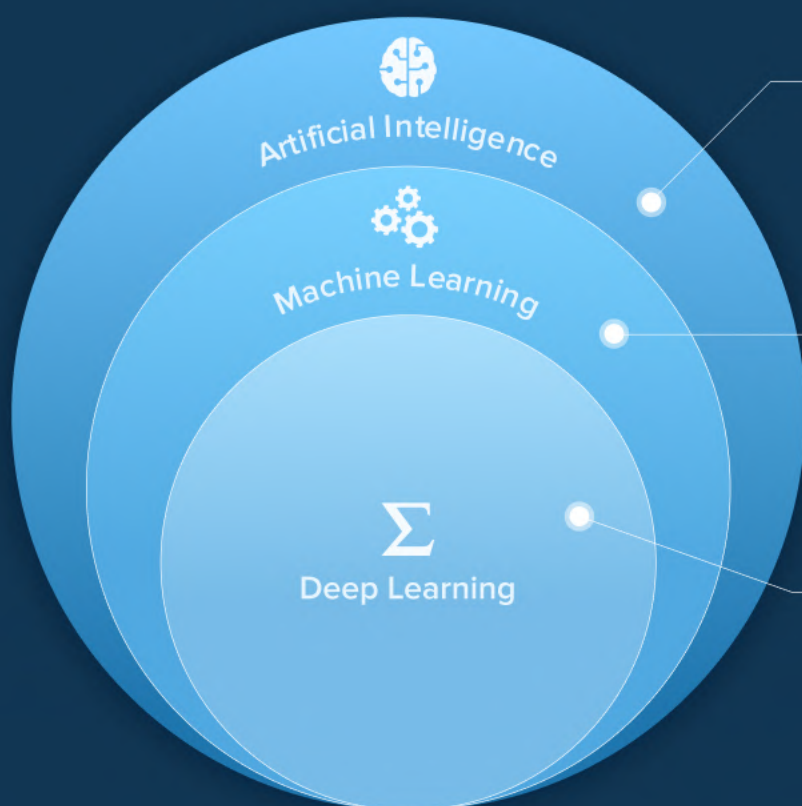
TOP MACHINE LEARNING USE CASES IN 2023



TOP MACHINE LEARNING USE CASES TO ADOPT IN 2023

In this infographic:

50+ machine learning use cases **6** industries **6** case studies



ARTIFICIAL INTELLIGENCE

An umbrella term that refers to mimicking human intelligence processes by computer systems.

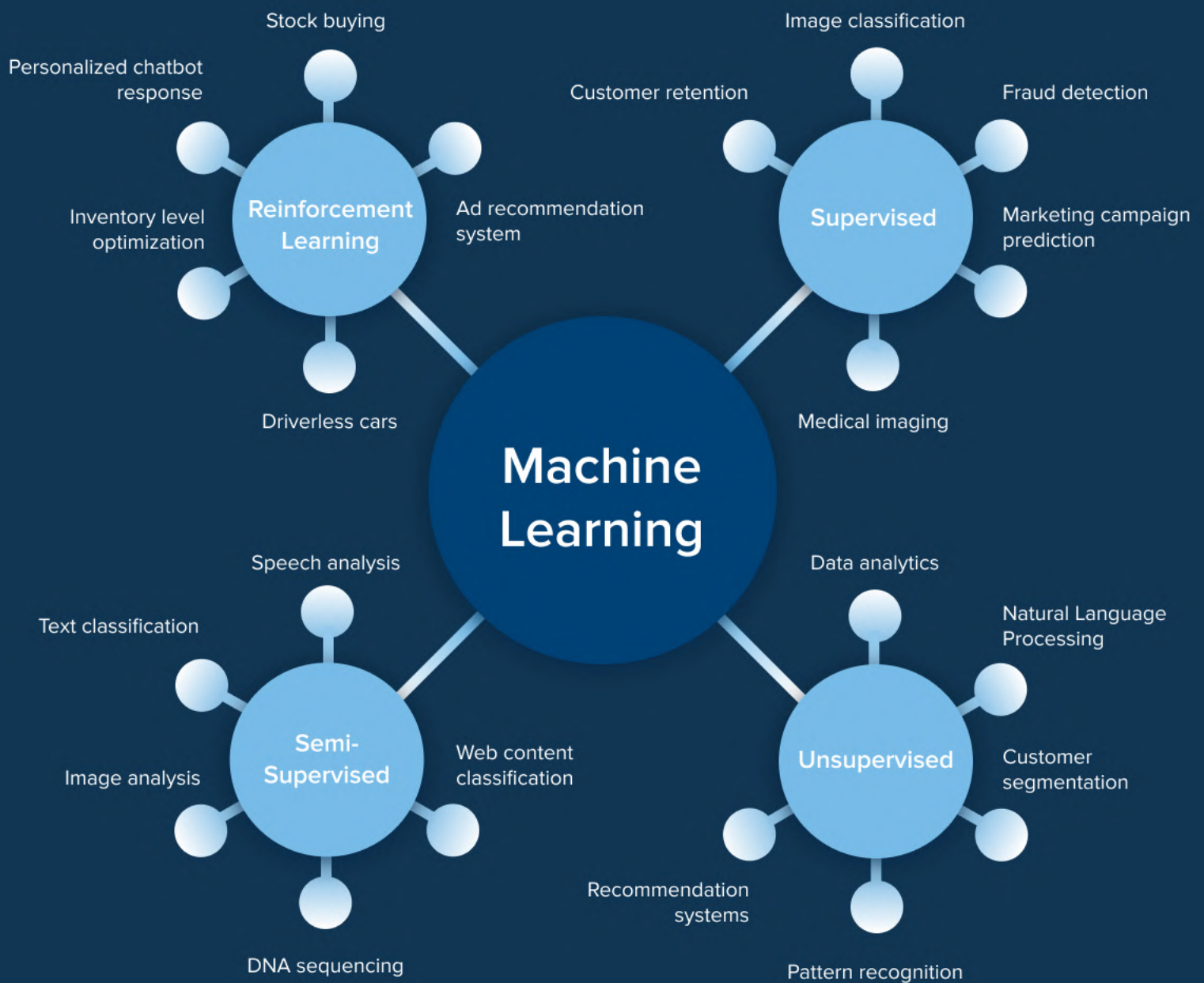
MACHINE LEARNING

A subset of AI that allows for designing and developing algorithms that can learn from data and make predictions.

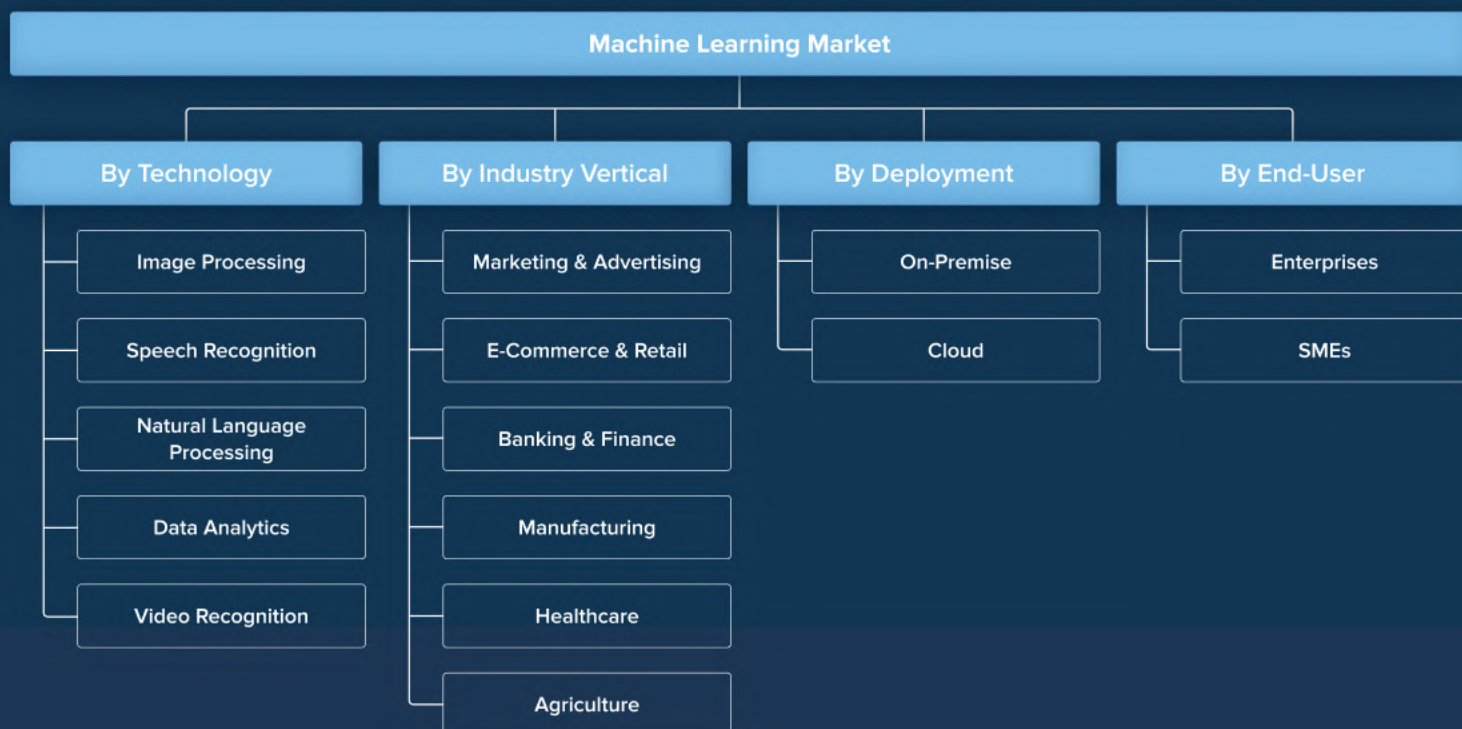
DEEP LEARNING

A branch of ML based on artificial neural networks that can emulate human-decision making capabilities.

Machine Learning Algorithms and Use Cases



Machine Learning Market



Machine Learning Market 2022 - 2030

Market Size	CAGR	Dominating Region	Forecast Period
\$21.17 Billion	38.8%	North America	2022 - 2030

Machine Learning in Marketing

\$15.84 Billion

The value of machine learning in marketing in 2021.

Statista

\$107.5 billion

An estimated value of ML in marketing by 2028.

Statista

Top Machine Learning Business Use Cases in Marketing



CAMPAIGN PERFORMANCE
PREDICTION



TARGETED ADVERTISING



AUDIENCE
SEGMENTATION



CUSTOMER 360
ANALYTICS



WEATHER MARKETING



CUSTOMER CHURN
PREDICTION



LEAD SCORING



SENTIMENT ANALYSIS



AD SPEND OPTIMIZATION



CONTENT GENERATION

Marketing AI Outcomes

Drift.com

Marketing AI Outcomes	Percentage Of Respondents
Creating personalized customer experiences at scale	41%
Accelerating revenue growth	40%
Getting more actionable insights from marketing data	40%
Reducing time spent on repetitive, data-driven tasks	37%
Generating greater ROI on campaigns	36%
Driving costs down	30%
Predicting customer needs and behaviors with greater accuracy	29%
Increasing qualified pipeline	27%
Unlocking greater value from marketing technologies	25%
Shortening the sale cycle	19%

Case Study

Using AI to dynamically optimize ad spend



E-commerce and Retail Machine Learning Use Cases

AI-enabled technologies allow E-commerce retailers capitalize on the available data and create hyper-personalized customer experiences.

Business Value of E-commerce Machine Learning in Numbers

40%

more revenue generated from ML-enabled personalization.

McKinsey

76%

percentage of customers are likely to purchase from brands that personalize offers.

McKinsey

77%

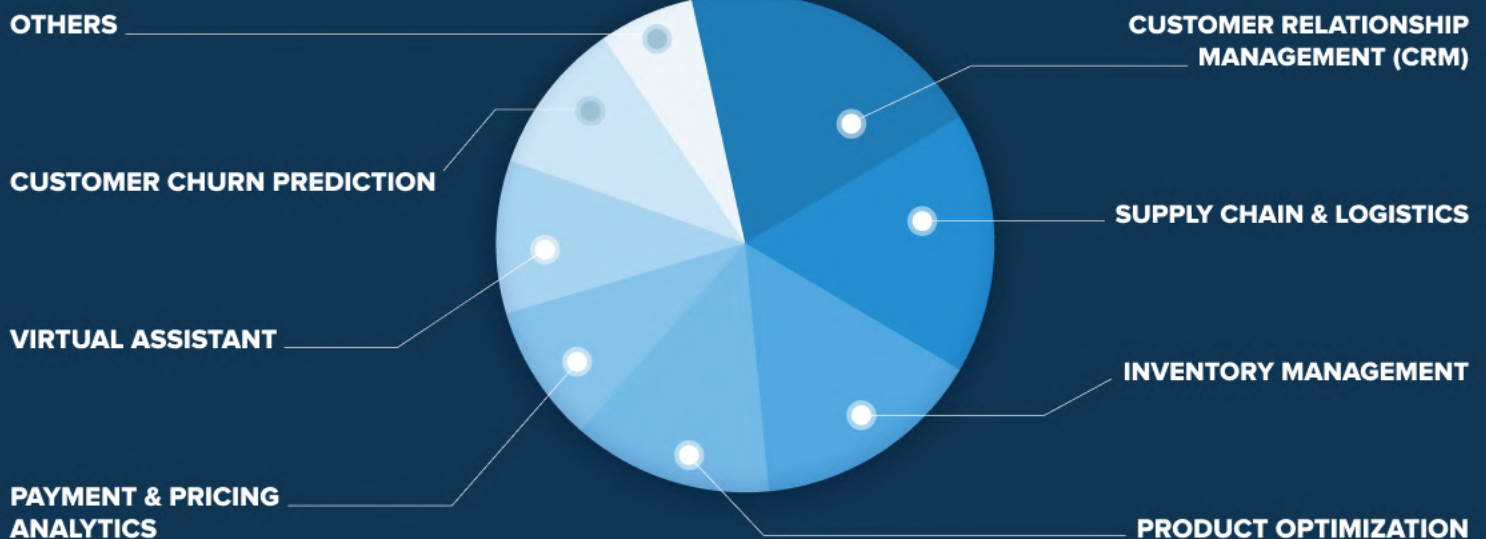
percentage of top performers that tailor customer journeys based on the context of previous interactions.

Aberdeen

Top E-commerce Machine Learning Use Cases

share, by application, 2022

Grand View Research



\$21.17B

Global market size of machine learning in retail, 2022.

Top Retail Use Cases for Machine Learning

01

CUSTOMER RELATIONSHIP PLATFORMS

Smart CRM software analyzes customer records and business data at each step of the sales funnel and provides automated insights about the customer and potential marketing initiatives.

02

SUPPLY CHAIN AND LOGISTICS

ML-enabled data analytics provides full visibility into operations, supports predictive decision-making, and allows for an optimized approach to routing and freight contracting.

03

INVENTORY MANAGEMENT

Intelligent algorithms predict inventory levels, forecast demand, reduce inventory waste, and help manage warehouses based on sensor data.

04

PRODUCT OPTIMIZATION

Machine intelligence provides potent instruments for product quality monitoring, product design, modeling of revenue growth, and product taxonomy.

05

PAYMENT AND PRICING ANALYTICS

With real-time analytics, companies can analyze pricing strategies for optimal revenue management, adjust pricing dynamically, and identify payment trends across multiple channels.

06

VIRTUAL ASSISTANTS

Based on NLP, virtual assistants support self-service for customers, providing them with relevant information, creating product descriptions, and answering queries.

Benefits of Intelligent Automation in Retail



REDUCED OPERATIONAL COSTS



SENTIMENT ANALYSIS



OPTIMIZED INVENTORY



AI PREDICTIVE ANALYTICS



ACCURATE FORECASTS FOR ALL RETAIL PLANNING



GRANULAR PERSONALIZATION



ENHANCED CUSTOMER SERVICE

Case Study

Using ML techniques to adjust prices in real time

01

DATA GATHERING

- Create a simulated sales environment
- Gather historical data about the product (seasonality, competitor prices, etc.)



02

ALGORITHM TRAINING

- Cluster the products by type
- Train a dynamic pricing model based on reinforcement learning



03

PREDICTION

- Calculate the maximum value the particular customer is ready to pay at that exact moment

A Glimpse at Machine Learning in Finance and Banking

\$1 trillion

Potential value of implementing AI and analytics in banking.

McKinsey

\$64.03 billion

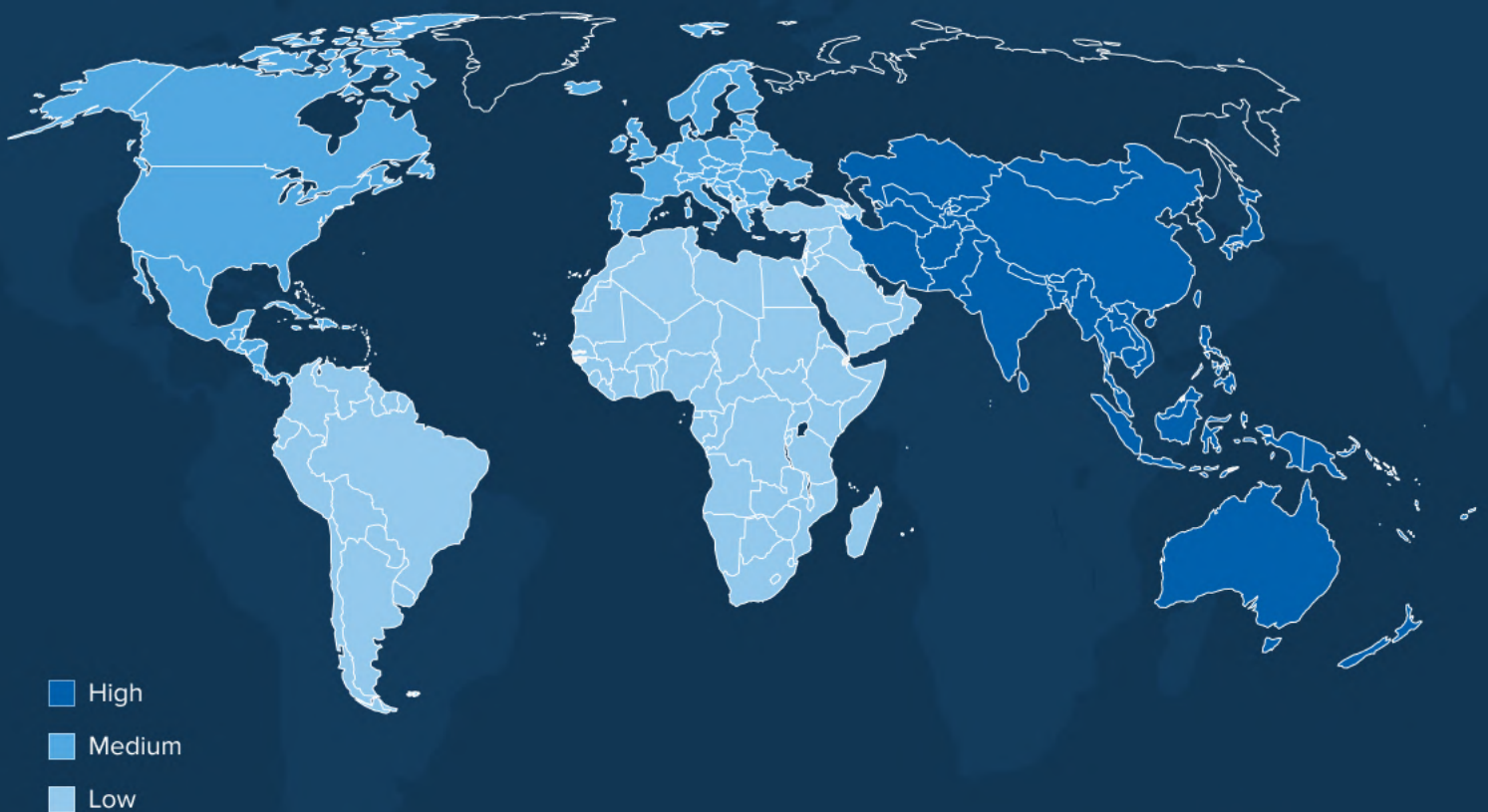
The market size by 2030.

Allied Market Research

75%

Number of banks with over \$100 billion in assets currently implementing AI strategies.

AI in Fintech Market - Growth Rate by Region (2022-2027)



Mordor Intelligence

How Computer Intelligence Addresses Challenges in Finance & Banking

COMPLIANCE EXCELLENCE

Challenges

- Banks and financial organizations confront evolving regulatory requirements
- Compliance and operational risk programs operate in silos
- Data privacy concerns continue to generate strategic business challenges

How machine learning can help

- Scans and analyzes any volume of regulatory activity
- Provides an integrated view of data and uniform compliance coverage
- Offers safeguards to ensure confidentiality, integrity, and availability of data

RISE IN FRAUD ATTEMPTS

Challenges

- Banks lament an increasing number of frauds
- Time and money are wasted on false positives during KYC
- Manual AML compliance decisions are costly

How machine learning can help

- Amplifies security posture and identifies anomalous behavior.
- Enables automated, ML-based KYC processes
- Accelerates AML processes across financial services

CHANGING CONSUMER BEHAVIOR

Challenges

- Customers prefer financial services based on personalization
- Self-service banking has become a staple
- Customers are willing to switch to digital-only wealth management

How machine learning can help

- Powers proactive, hyper-personalized experience
- Fuels virtual assistants for self-service
- Offers savings and investment recommendations

Top Finance Machine Learning Use Cases



Main Application Areas for Machine Learning in Banking



Customer Onboarding

ML-enabled verification, KYC, and document management



AML Systems

ML-based customer identification and transaction monitoring



Credit Underwriting

Smart credit risk analysis and automated loan decisioning



Day-to-day Banking

Improving compliance, document management, retention, and sales



Fraud Detection

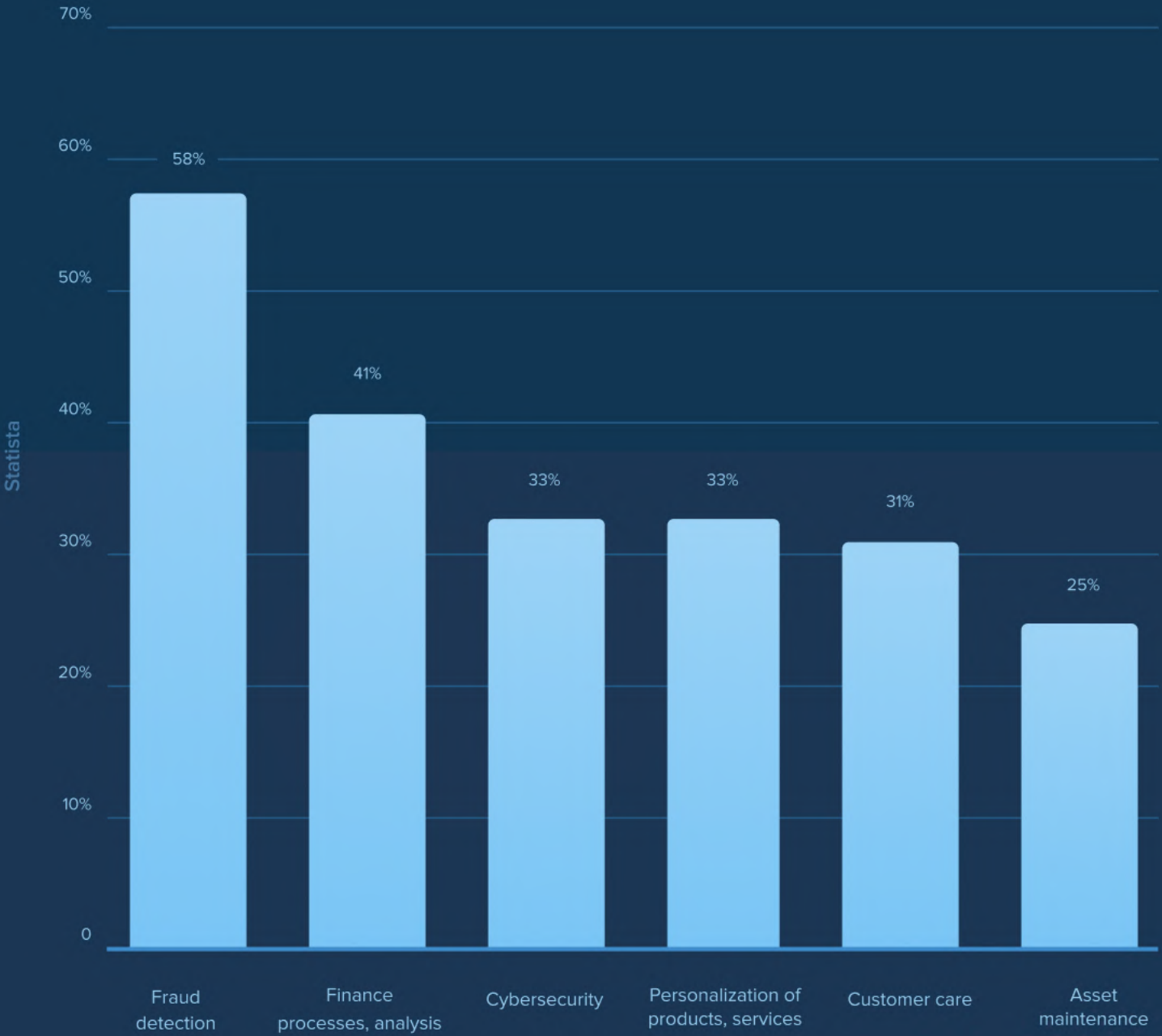
Identifying fraud and fortifying cybersecurity



Front Office

Conversational bots, targeted banking offers

Applications Leading the ML Adoption in the Financial Sector



How Machine Learning Shapes the Manufacturing Industry

\$2.3 billion

The market value of machine learning in manufacturing in 2022.

Globe Newswire

\$16.3 billion

The market value of ML in manufacturing by 2027.

Globe Newswire

93%

Percentage of companies relying on AI to drive growth in the sector.

Deloitte

Key Drivers of Intelligent Automation in Manufacturing

- Big data
- Hardware advances
- Cloud computing
- Industrial IoT



Challenges Manufacturers Face Daily

- Growing amount of data silos
- Unplanned downtimes with associated production losses
- Incomplete view of business operations



Data Types Residing in Manufacturing Siloed Systems

Structured data



Production execution systems (MES)



Business systems (ERP, PLM, CRM)



Process monitoring technologies (HMI-SCADA)



Order and inventory platforms

Unstructured data



Industrial IoT data



Text documents

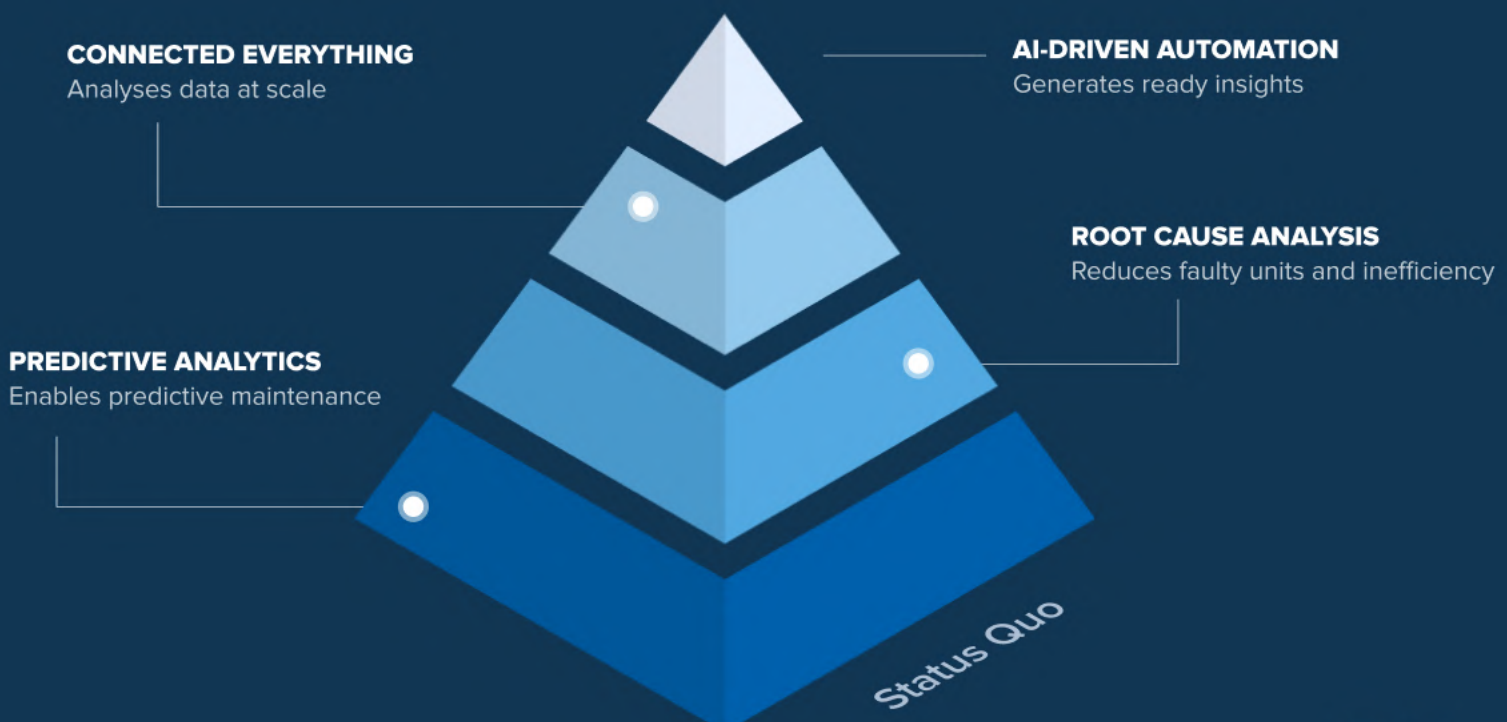


Video

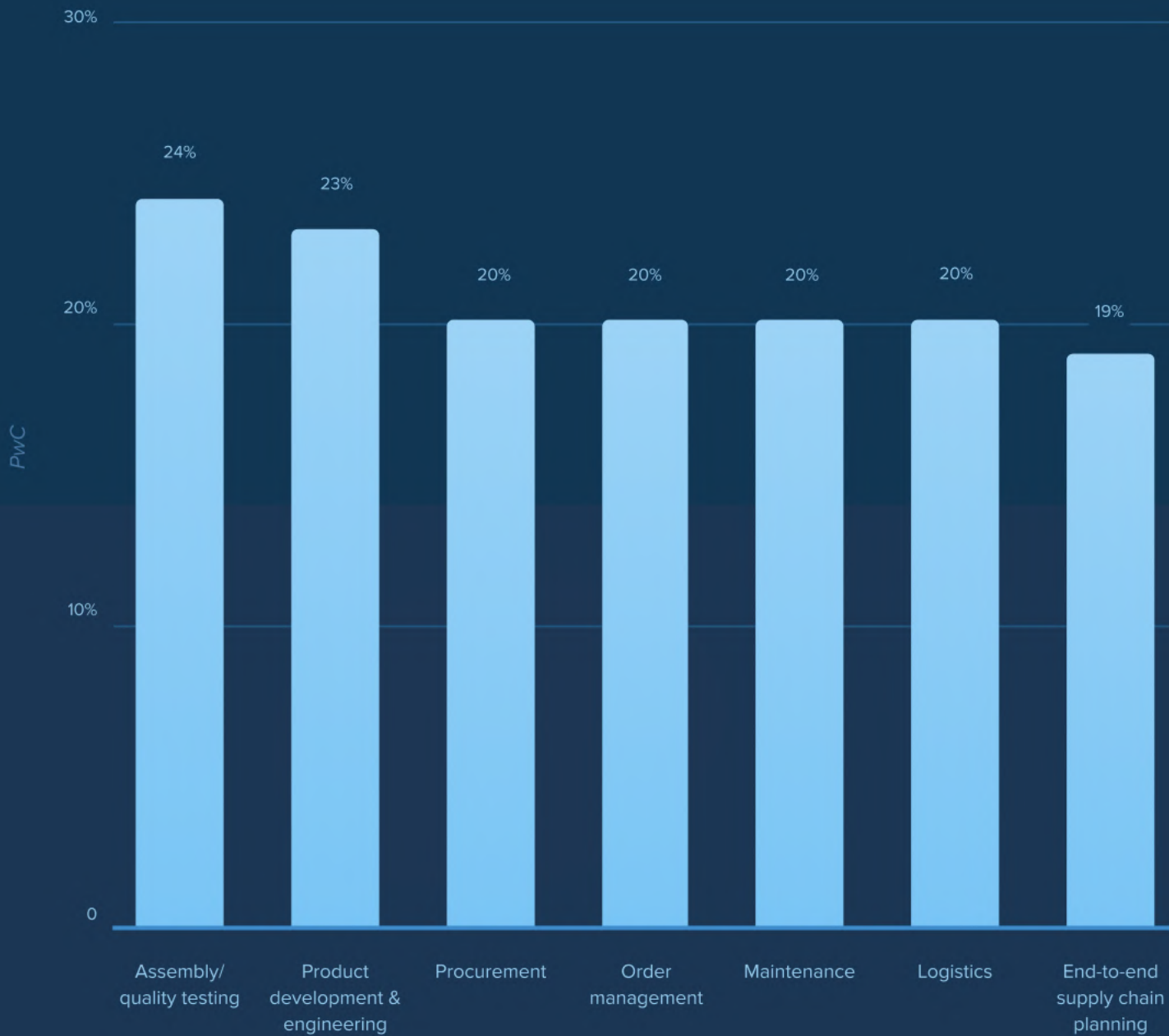


Images

4 Analytics Capabilities Machine Learning Brings into Manufacturing



Machine Learning Use Cases in Manufacturing



Business Use Cases for Machine Learning in Manufacturing

Grow revenue



**SALES AND MARKETING
AUTOMATION**



**ML-GENERATED
PRODUCT DESIGN**

Reduce costs



DESIGN TO COST



**BACK-MID-/FRONT-OFFICE
PROCESS AUTOMATION**



DEMAND FORECASTING



LABOR AUTOMATION



**DIGITAL SUPPLY CHAIN /
INVENTORY**



**DETAILED SCHEDULING/
NETWORK PLANNING**

Optimize expenses

Case Study

Using ML to predict equipment failures

01

DATA GATHERING

- Connect sensors to assets
- Clean and preprocess sensor data from the machine



02

ANALYSIS

- Identify baseline and set parameters
- Assess the historical data of the equipment over a fixed period of time



03

ANOMALY DETECTION

- Detect anomaly outside the parameters
- A work order is created for the equipment

Significance of Machine Learning in Healthcare

\$22.4 billion

Market size value in 2023

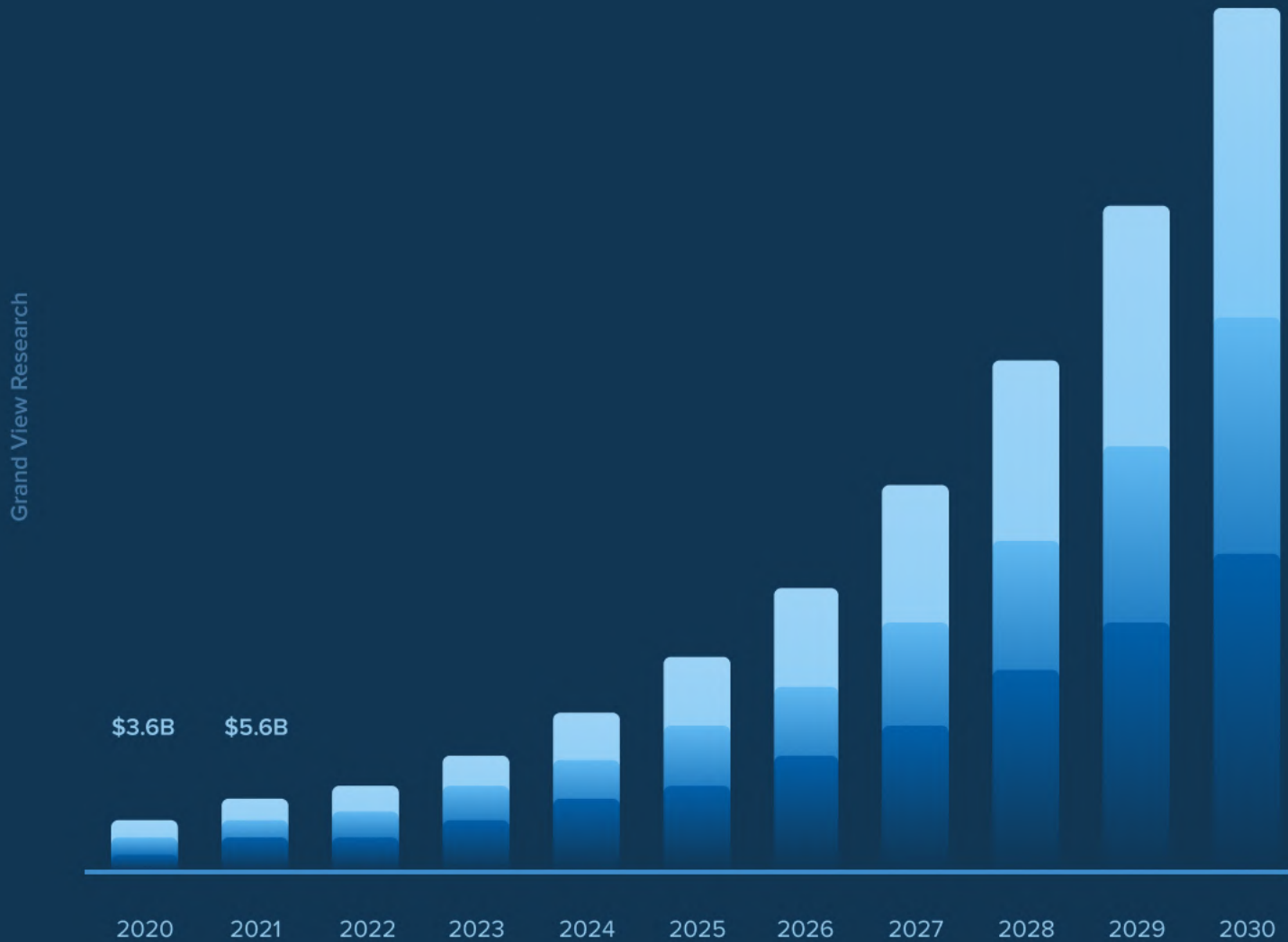
Grand View Research

37.5%

Growth rate from 2023 to 2030

Grand View Research

The availability of Big data and the demand to reduce costs are expected to drive the market during the forecast period.



Healthcare Use Cases for Machine Learning by Area



Clinical Practice



Biomedical Research



Healthcare Administration

Radiology

Clinical Research

Scheduling

Mental Health

Drug Discovery

Inventory Management

Home Care

Clinical Trials

Detection of Fraudulent Activity

Emergency Medicine

Personalized Medicine

Patient Flow Management

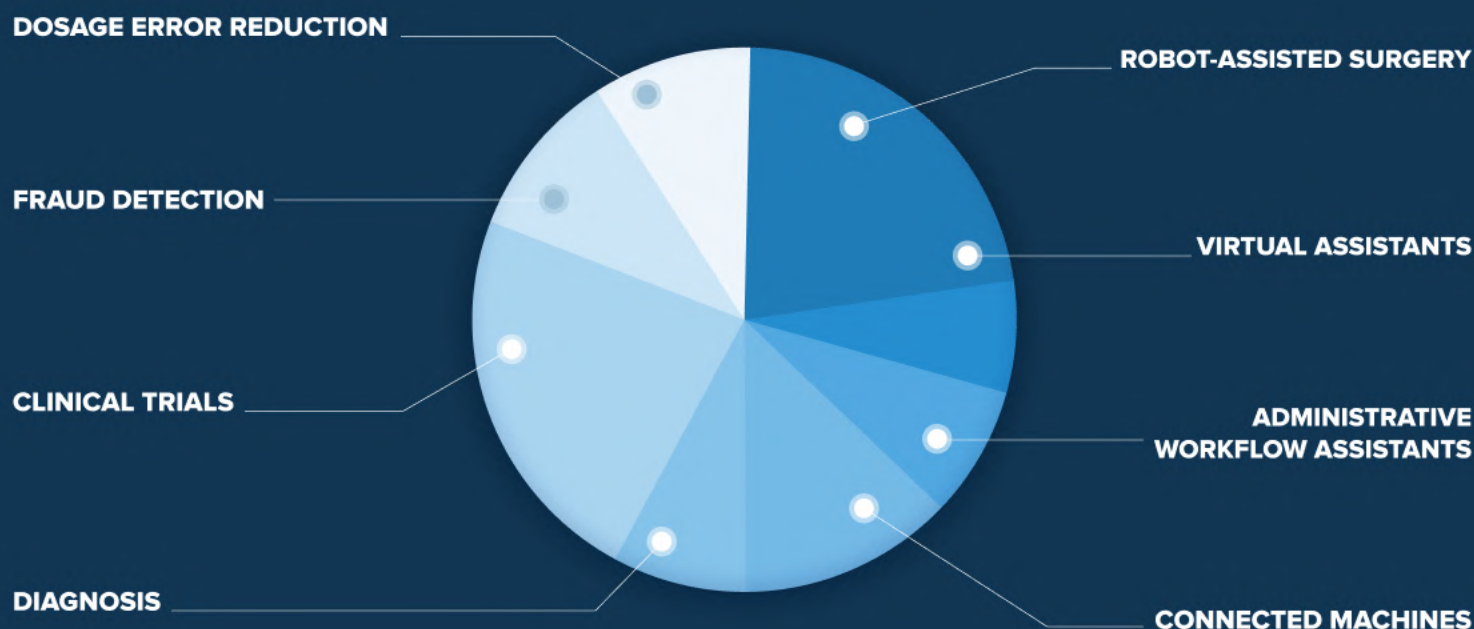
Digital Pathology

Healthcare Audits

Cardiology

Risk Prediction

Top Machine Learning Use Cases in Healthcare by Share



State of Healthcare Without Automation

Increasing Healthcare Costs

Persist to rise by 6% in 2023 with administrative costs taking up to 30% of overall expenses

Care Model Constraints

Limit granular insights into the care needs of each patient

Complexity of Drug Discovery

Pressures the industry due to the long and high-cost process of discovery

AI-Enabled State in Healthcare



Reduced Costs of Care

Due to streamlined administrative tasks, higher efficiency, and real-time insights



Precision Medicine

Driven by ML algorithms to identify the effective approach for each patient based on multiple factors



Better Medicines Faster

Thanks to AI analyzing vast reams of data, uncovering patterns, and predicting effects.

Case Study

Augmented ED (Emergency department) needs analysis based on Artificial Intelligence

01

INGEST, TRANSFORM AND LINK DATA SETS

- Historical medical claims
- Demographic data
- Socioeconomic data and consumer factors

02

MERGE AND EVALUATE THE DATA

- Determine and classify the most accurate procedure and diagnosis codes
- Create a time-series format for claims history
- Generate enhanced predictive features

03

BUILD PREDICTIVE MODEL

- Supervised learning for predicting utilization patterns
- Causal inference to predict impact intervention
- Unsupervised learning to validate clinical logic

McKinsey

Machine Learning in the Agriculture Industry

2020 \$1 billion

Markets and Markets

2026 \$6 billion

Markets and Markets

Market growth will accelerate at a CAGR (2020-2026)

25.5%



Growth Drivers

- Growing adoption of IoT in the farming sector
- Increasing demand for high agricultural production
- Growing focus on advanced crop management

Areas of Application for Machine Learning in Farming

1 CROP, SOIL, AND LIVESTOCK MONITORING

2 WEATHER AND TEMPERATURE FORECASTING

3 AUTONOMOUS AGRICULTURAL ROBOTS AND FARM

4 DETECTION OF PESTS AND DISEASES

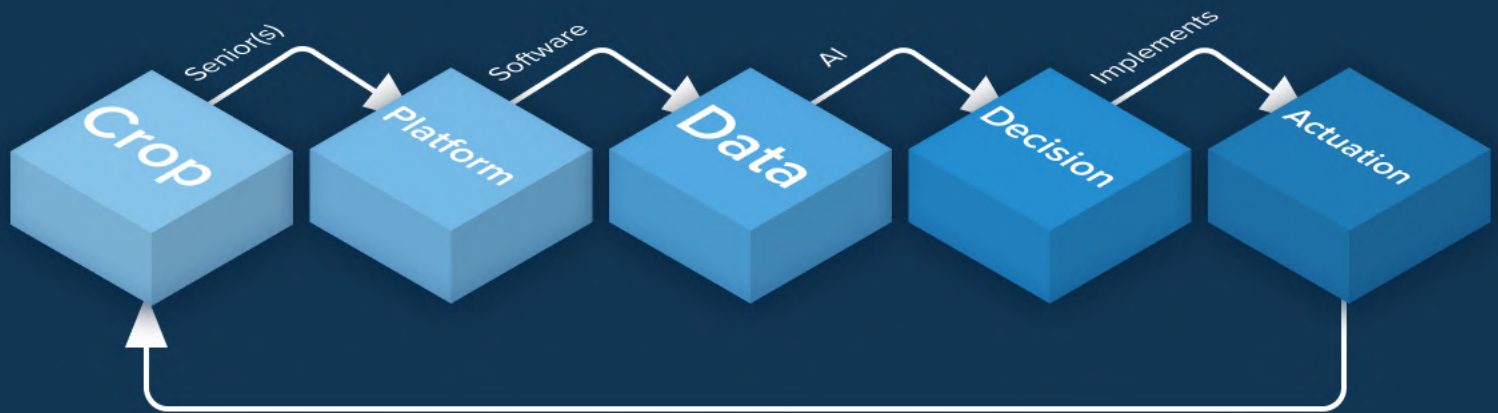
5 YIELD PREDICTION

6 PRECISION FARMING

Major Challenges Solved by Machine Intelligence

Challenges	How machine learning can help
Unsustainable farming practices that cause soil degradation	Predicting the presence of pests; precision spraying
High-input farming systems causing water scarcity	Optimizing water consumption based on historical irrigation data and soil conditions
Challenges in price discovery for farmers	Forecasting prices and analyzing market demand
Lack of warehouse visibility that leads to wastage	Warehouse automation, logistics optimization, document processing
Drop in farm productivity	Detecting disease in plants, improving plant resistance via genome engineering

Data-Driven Management for Advanced Farming



Case Study

Using smart algorithms for predicting soil fertility



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