

# Applications of AI in Business Use Cases



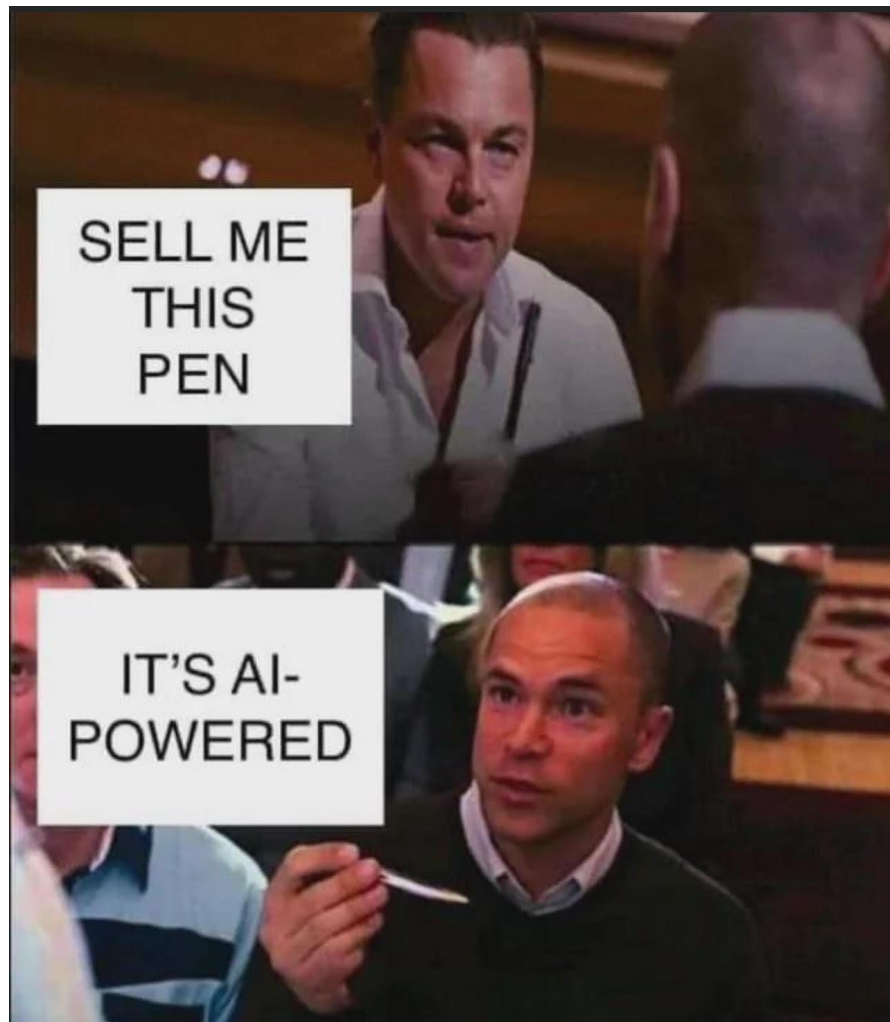
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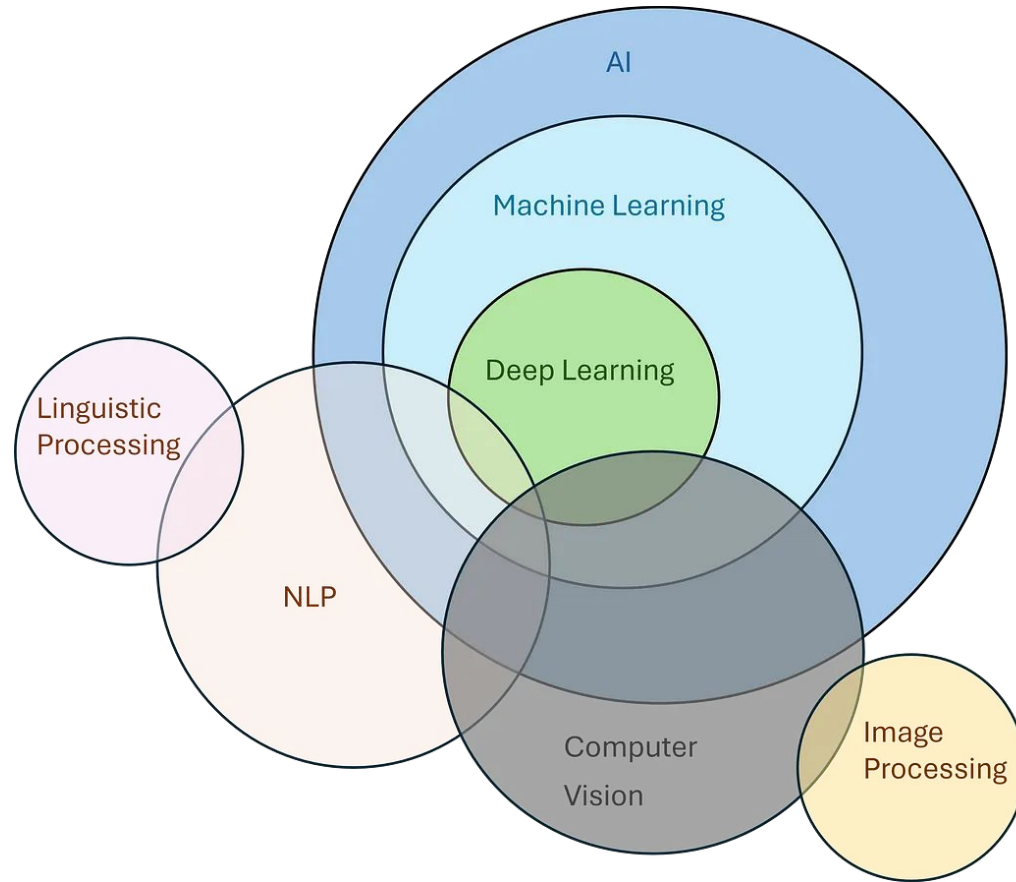
*The University of Texas at Tyler*

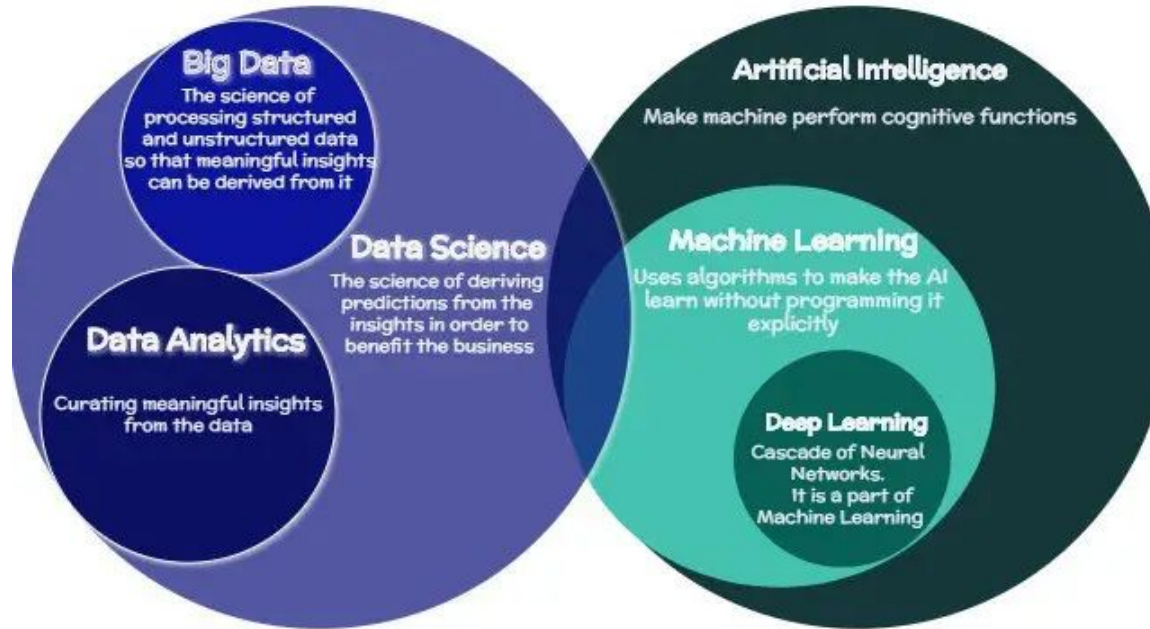


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## BENEFITS OF **ARTIFICIAL INTELLIGENCE** IN DIGITAL TRANSFORMATION







# Benefits of AI analytics vs. Traditional analytics

## Speed and efficiency



With AI, businesses can quickly process large datasets, enabling them to gain insights rapidly and react to market changes.

## Data complexity

Machine learning algorithms and natural language processing (NLP) can analyze complex, unstructured data types, enabling rich insights.

## Predictive accuracy



Continuously learning from new data inputs, AI algorithms can identify market trends and emerging patterns, leading to more accurate forecasts.

## Scalability



AI is capable of handling vast amounts of data without sacrificing accuracy or speed.

## Real-time insights

AI-driven tools allow businesses to make business decisions based on current data, enabling proactivity.

- **Cost Reduction:** According to **McKinsey**, businesses employing data science have experienced cost reductions of **20%** in various operational areas.
- **Supply Chain Optimization:** According to **Pasa**, companies implementing and utilizing data analyzing solutions can increase their procurement and supply chain performance by up to **40%**.
- **Revenue Growth:** In a study by the **NewVantage Partners**, **97.2%** of executives believed that their companies have benefited from big data and AI, leading to revenue growth.
- **Personalization:** **Econsultancy** reported that **93%** of companies have experienced an increase in conversion rates due to personalization; this was a result of data-driven insights.
- **Customer Retention:** Companies that leverage data analytics for customer insights experience a **23 times higher** customer retention rate.
- **Fraud Detection:** According to an **ACFE Report to the Nations**, firms who executed proactive data analytics tools found fraud 58 percent faster and experienced financial losses that were **52 percent lower** than organizations that did not implement tools.
- **Predictive Maintenance:** **Deloitte** reports that undertaking predictive maintenance programs in manufacturing can save material and inventory carrying costs, increase equipment uptime and availability, provide more time for data-driven problem-solving, and more.
- **Market Expansion:** **Amazon's** recommendation system, which is powered by data science, contributes **35%** of the company's revenue.





# Why Data Science Is Important in Business?



DatabaseTown.com

**Data-Driven  
Science**

1

Enhanced Decision-Making

2

Identifying New Opportunities and Trends

3

Increasing Efficiency and Streamline Operations

4

Improving Customer Experience

5

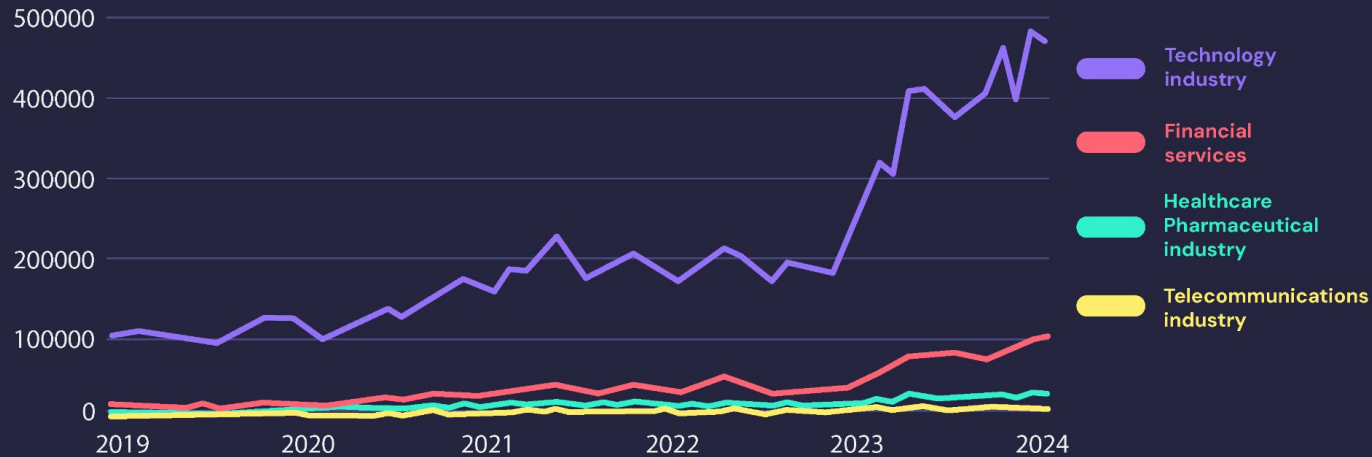
Gaining a Competitive Advantage

6

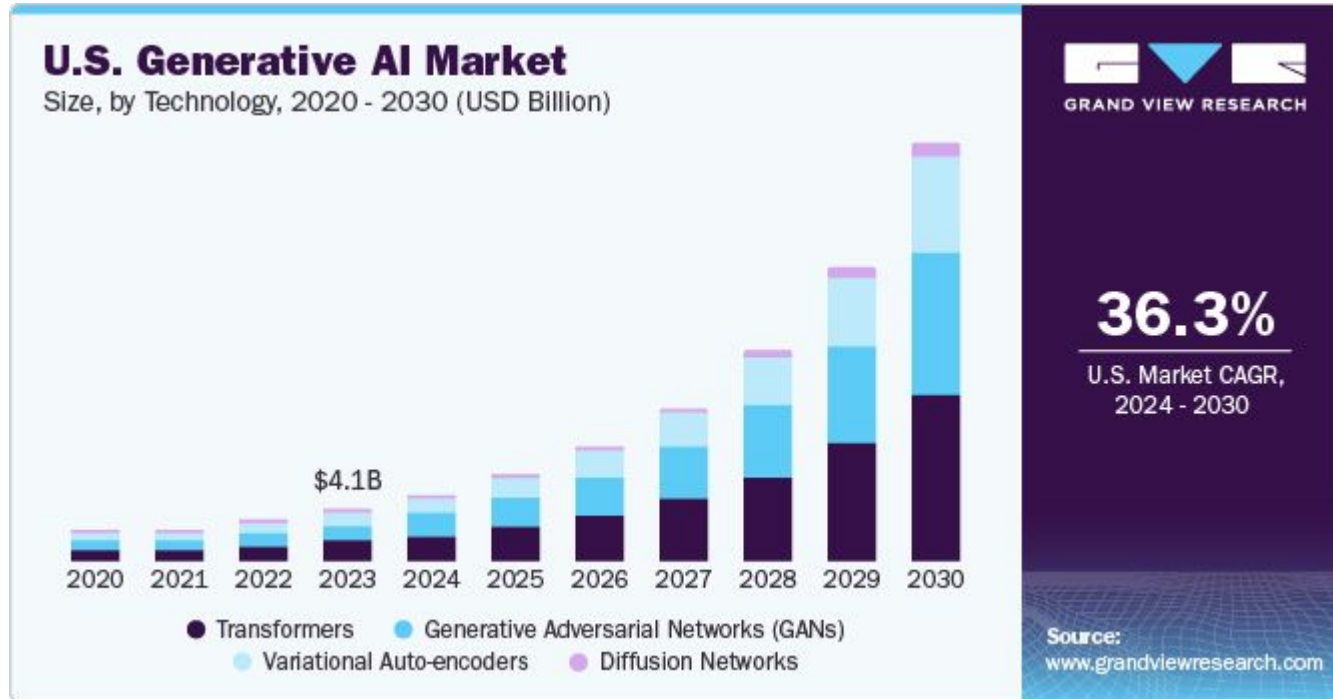
Risk Mitigation and Fraud Prevention



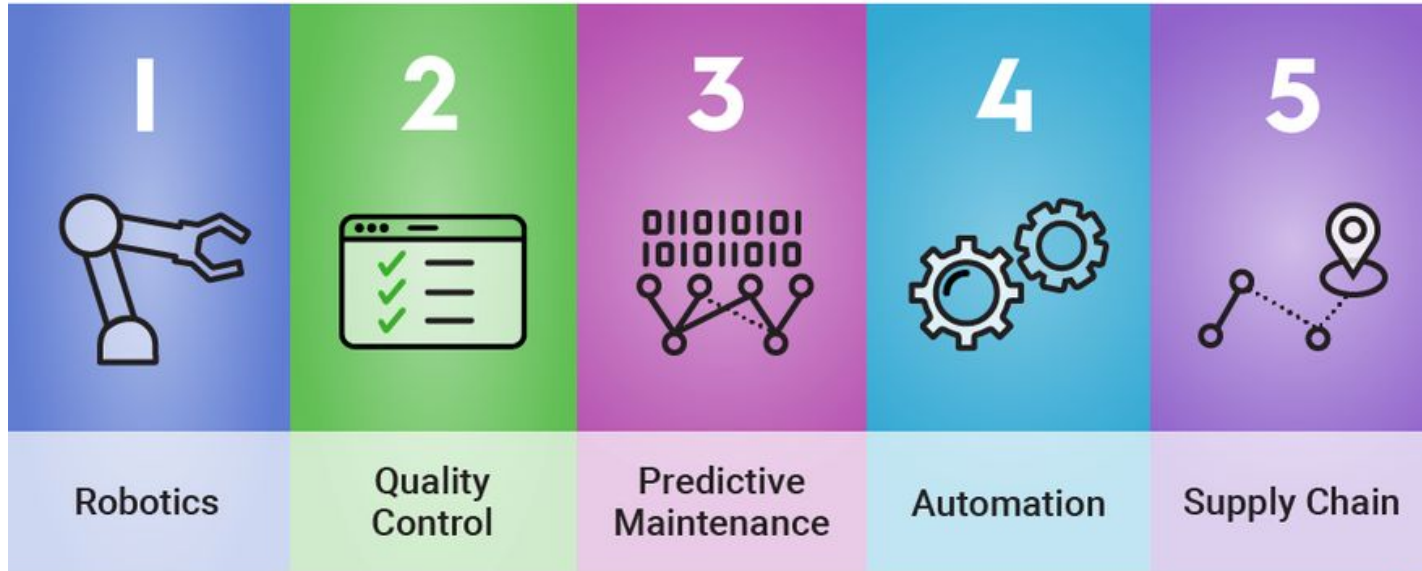
# AI Adoption



# AI Adoption



## EXAMPLES OF AI IN MANUFACTURING



# Siemens' AI-Driven Quality Control

**Challenge:** High defect rates, manual inspections were time-consuming & error-prone.

- **AI Solution:** Siemens implemented AI-powered computer vision to inspect product defects.
- **Results:**
  - Reduced defect detection time by 40%
  - Improved product quality & decreased rework costs
  - Increased production efficiency with 24/7 automated inspections
- **Takeaway:** AI-driven visual inspections enhance quality control, reduce waste, and increase efficiency.

# EXAMPLES OF AI IN FINANCE

1



Lending

2



Fraud Detection

3



Insurance

4



Customer  
Service

5



Investing

# JPMorgan Chase's AI Fraud Detection

- **Challenge:** Increasing fraud attempts; inefficient traditional fraud detection
- **AI Solution:** AI-driven anomaly detection analyzes transactions to detect fraud.
- **Results:**
  - **Reduced false positives by 50%**
  - **Detected fraud 30% faster**
  - **Saved millions in fraudulent transaction losses**
- **Takeaway:** AI-driven fraud detection enhances security & financial stability.

# EXAMPLES OF AI IN HEALTHCARE

1



**Precision  
Medicine**

2



**Drug Discovery**

3



**Medical  
Diagnostics**

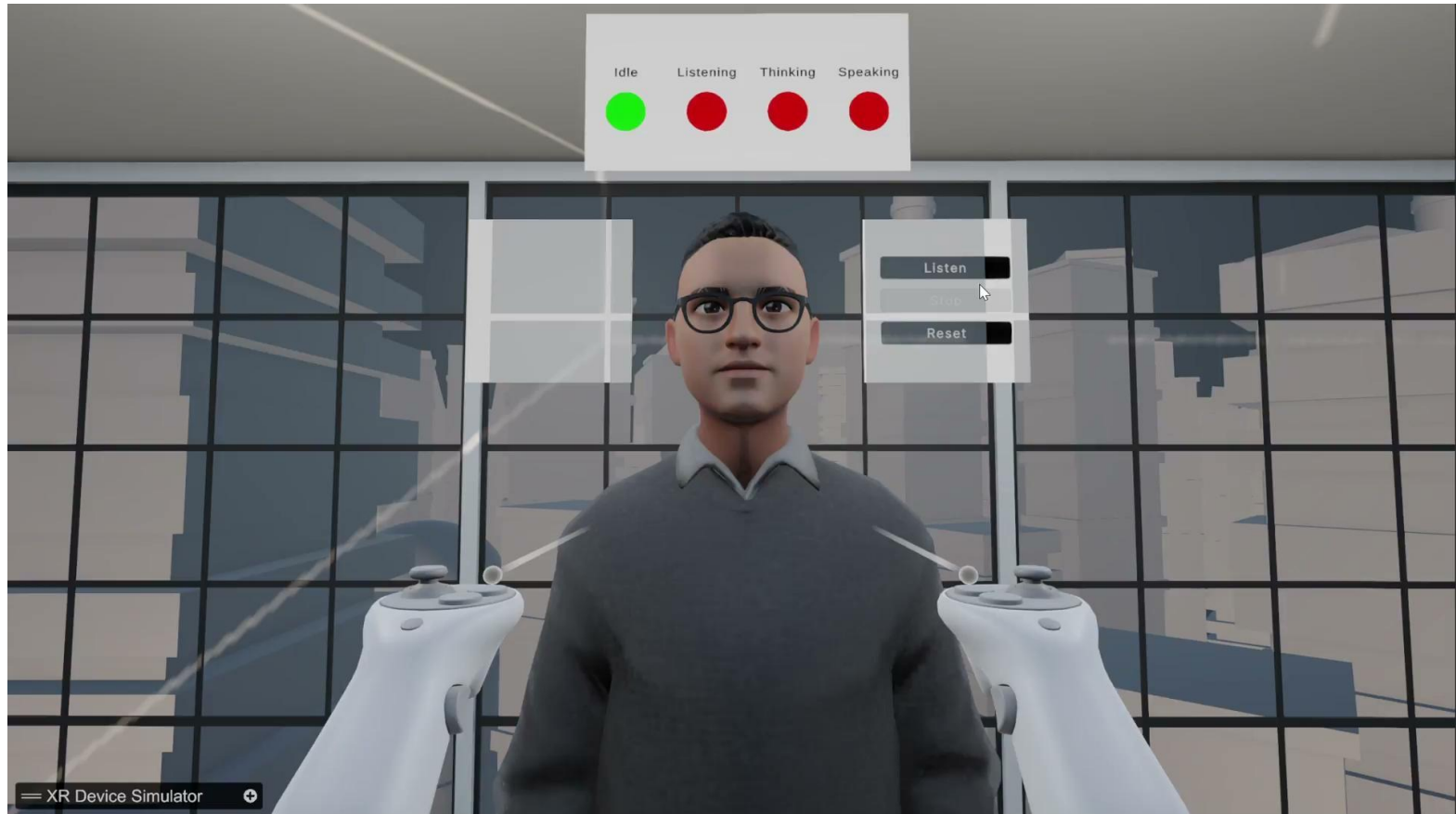
4



**Robotics**



# Advancements in Medical Education



# EXAMPLES OF AI IN RETAIL

1



Demand  
Forecasting

2



Recommendations

3



Cashierless  
Technology

4



Inventory  
Management

5



Customer  
Sentiment Analysis



#### WONDER



Show me 3 verbatims negatively talking about the high sugar content of this coca cola soda.



1. "I can't believe how much sugar is in this Coca Cola soda! It's like drinking liquid candy. No wonder it's so bad for your health."
2. "The high sugar content in this Coca Cola soda is really concerning. It's just empty calories and contributes to weight gain. I wish they would offer a healthier option."
3. "I used to love drinking Coca Cola, but now I'm trying to cut back on sugar. The amount of sugar in this soda is shocking and makes me think twice before indulging."



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#### WONDER



Which topics are the most relevant for customer satisfaction?



Based on the impact on satisfaction data, the most relevant topics for customer satisfaction are: - "Taste" with a value of 17.5 - "Price" with a value of 5.9.



For coca cola zero, please show me verbatims where customers talk about sugar content.



Sure, here are a few verbatims from customers discussing the sugar content of Coca Cola Zero:

1. "I love the taste of Coca Cola Zero, and the fact that it has zero sugar is a huge plus for me. It's a guilt-free indulgence!"
2. "I switched to Coca Cola Zero because I wanted to cut down on my sugar intake. It's great to have a refreshing drink without all the added sugar."
3. "I was pleasantly surprised by how similar Coca Cola Zero tastes to the regular version. It's a great option for those who want to enjoy a cola without the high sugar content."

## WONDER



Develop a campaign message promoting this coca-cola zero, highlighting its top product attributes.



Introducing Coca-Cola Zero - the perfect choice for those seeking the great taste of Coca-Cola with zero sugar and zero calories. Indulge in the refreshing and bold flavor you love, guilt-free. Experience the best of both worlds - the classic Coca-Cola taste without compromising on your health goals. Quench your thirst and enjoy the satisfaction of a delicious beverage without any added sugar.

# AI in Education



## Talon

-- Your Virtual Teaching Assistant for COSC 4336



Hello Patriots, how can I help you today?



What is a Database?



According to Dr. Sagnik Dakshit's notes and lectures in his Software Development class, a database refers to a collection of organized data that can be efficiently accessed, managed, and updated. It is designed to store, manipulate, and retrieve large amounts of data using various querying languages such as SQL (Structured Query Language). In the context of modern databases, it emphasizes the importance of efficient storage, retrieval, and manipulation of data in a scalable and flexible manner.

# EXAMPLES OF AI IN REAL ESTATE

1



Predictive  
Analytics

2



3D Modeling

3



Smart Home  
Devices

4



Property  
Management

5



Mortgages



# Zillow's AI-Powered Zestimate

- **Challenge:** Home buyers & sellers needed accurate property valuations. Traditional appraisal methods were time-consuming & inconsistent
- **AI Solution:** Zillow's Zestimate uses AI & ML to estimate property values
- **AI analyzes millions of data points, including market trends & home features**
- **Results:**
  - **Zestimate covers 104 million homes with median error < 2%**
  - **AI-driven pricing models improved home sale accuracy**
  - **Faster & more efficient real estate transactions**
- **Takeaway:** AI-powered property valuations enhance pricing accuracy and market efficiency.



# EXAMPLES OF AI IN TRAVEL

1



Recommendations

2



Booking

3



Forecasting

4



Flying  
Improvements

5



Itineraries

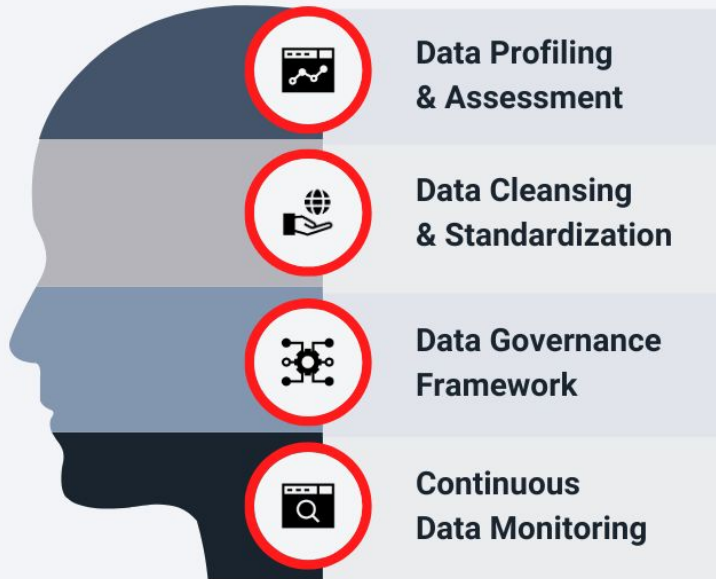
# Expedia's AI Chatbots & Dynamic Pricing

- **Challenge:** Travelers faced difficulty booking personalized trips. Airlines & hotels struggled with fluctuating demand & pricing
- **AI Solution:**
  - Expedia's AI Chatbots provide 24/7 customer service & booking assistance
  - Dynamic Pricing Models optimize airline & hotel rates in real time
- **Results:**
  - AI chatbots handled 70% of customer queries, reducing service costs
  - Expedia's AI-powered pricing increased booking conversions by 25%
  - Airlines & hotels maximized revenue by adjusting prices based on demand
- **Takeaway:** AI improves customer experience, optimizes pricing, and boosts revenue in travel.

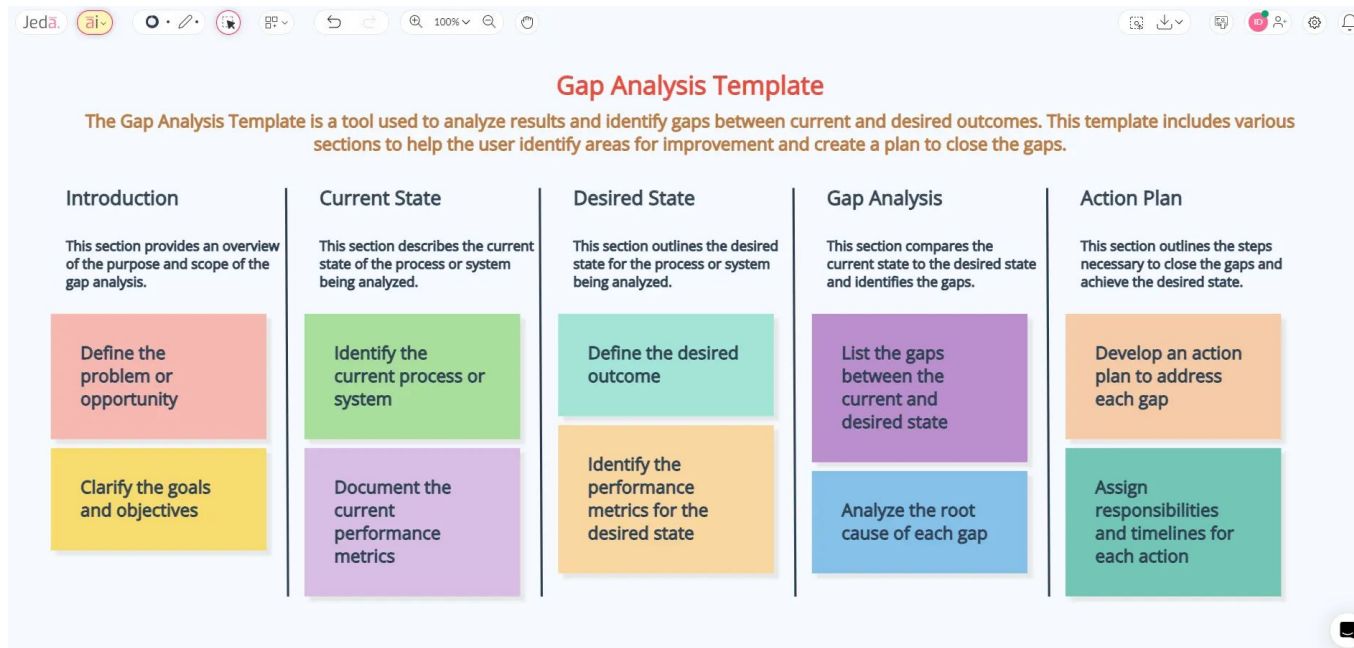
# THE 5 ESSENTIAL STEPS FOR IMPLEMENTING DATA-DRIVEN DECISION MAKING



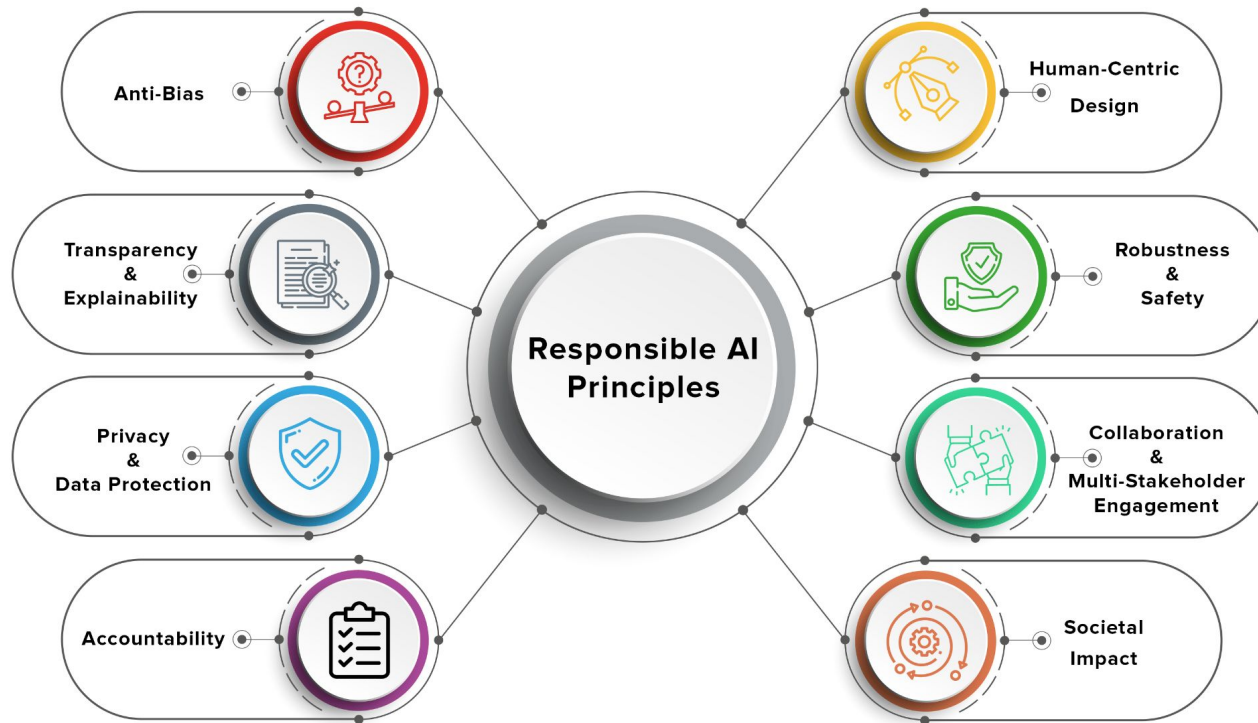
# 4 Steps to Verify Your **Data Readiness for AI**



# AI in Gap Analysis



# Challenges in using AI for Business



# Challenges in using AI for Business

## CHALLENGES FOR AI IMPLEMENTATION





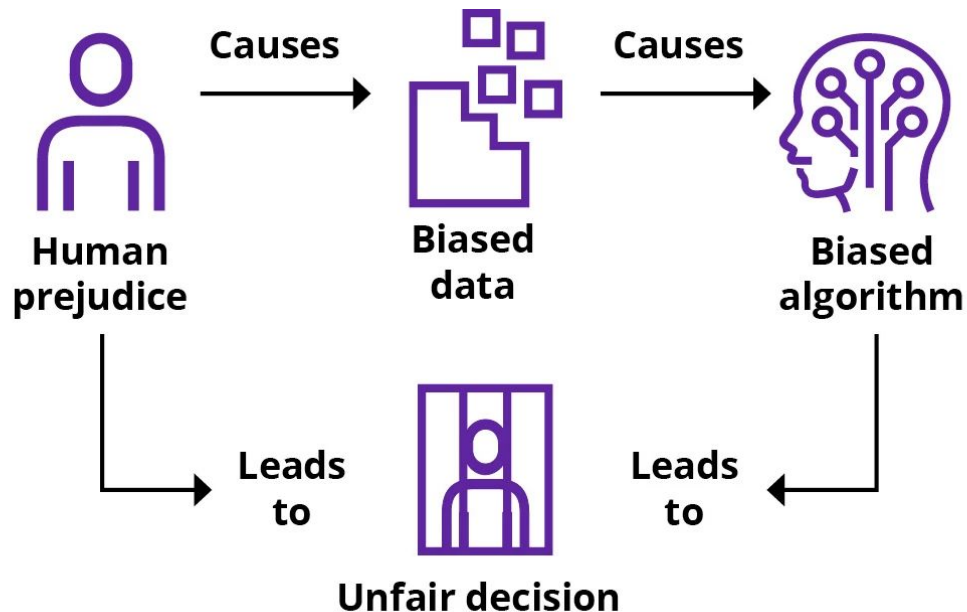
# Challenges in using AI for Business



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# Challenges in using AI for Business



# AI Frameworks

## DL Frameworks



Detectron



TensorFlow



Nvidia TAO



Theano



MXNet



PyTorch

## Modules/Toolkits



Core ML



Nvidia DeepStream



ONNX



Neptune

## Libraries



Sonnet



pandas



scikit-Learn



OpenCV



TensorRT



NumPy

# AI Frameworks

## Generative AI Frameworks & Tools



Llama 2



# What's Next in AI....



Artificial Narrow Intelligence (ANI)

## Stage 1 - Machine Learning

Specializes in one area and solves one problem



Artificial General Intelligence (AGI)

## Stage 2 - Machine Intelligence

Refers to a computer that is as smart as a human across the board



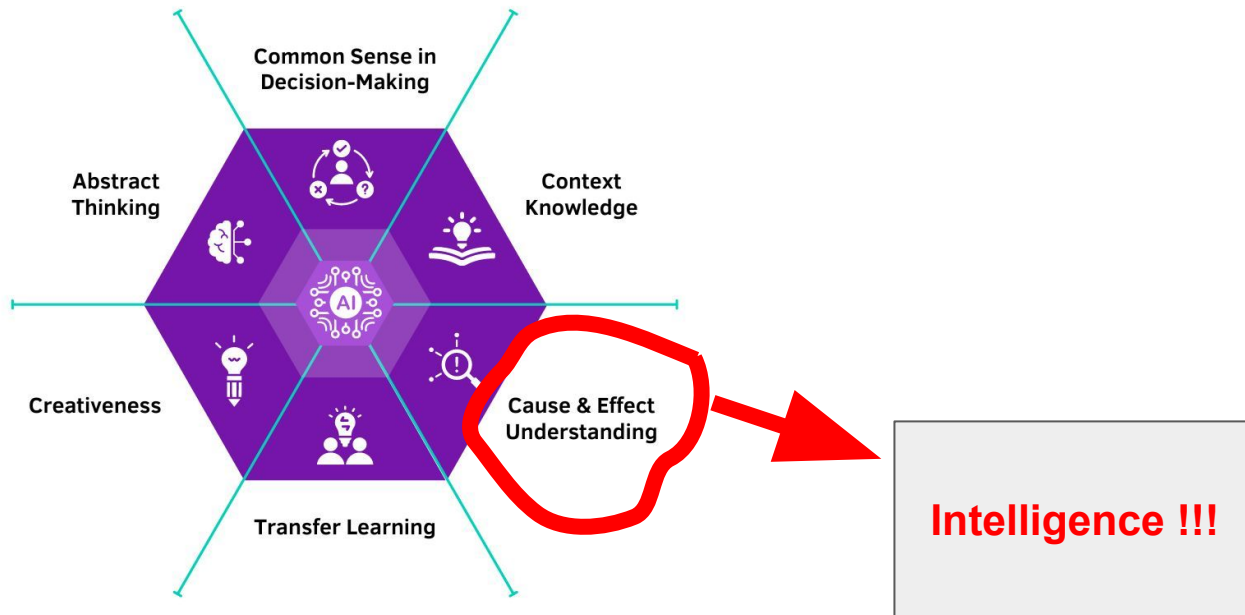
Artificial Super Intelligence (ASI)

## Stage 3 - Machine Consciousness

An intellect that is much smarter than the best human brains in practically every field

# What's Next in AI....

## Artificial General Intelligence



# Thank you

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