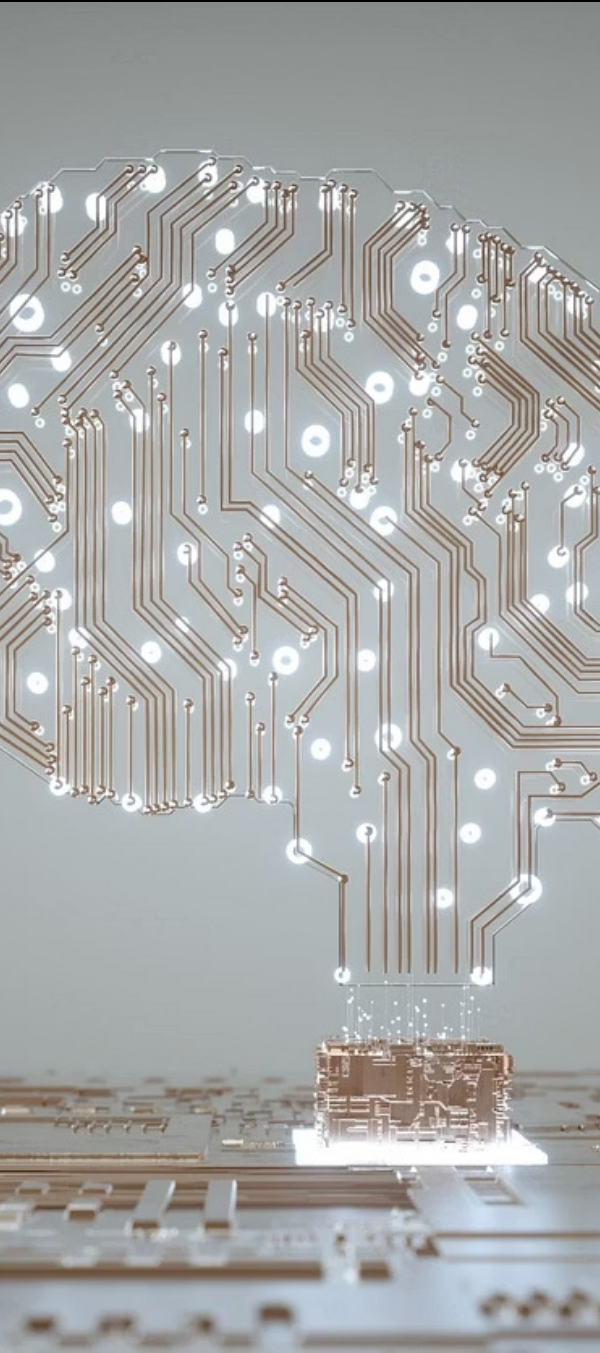
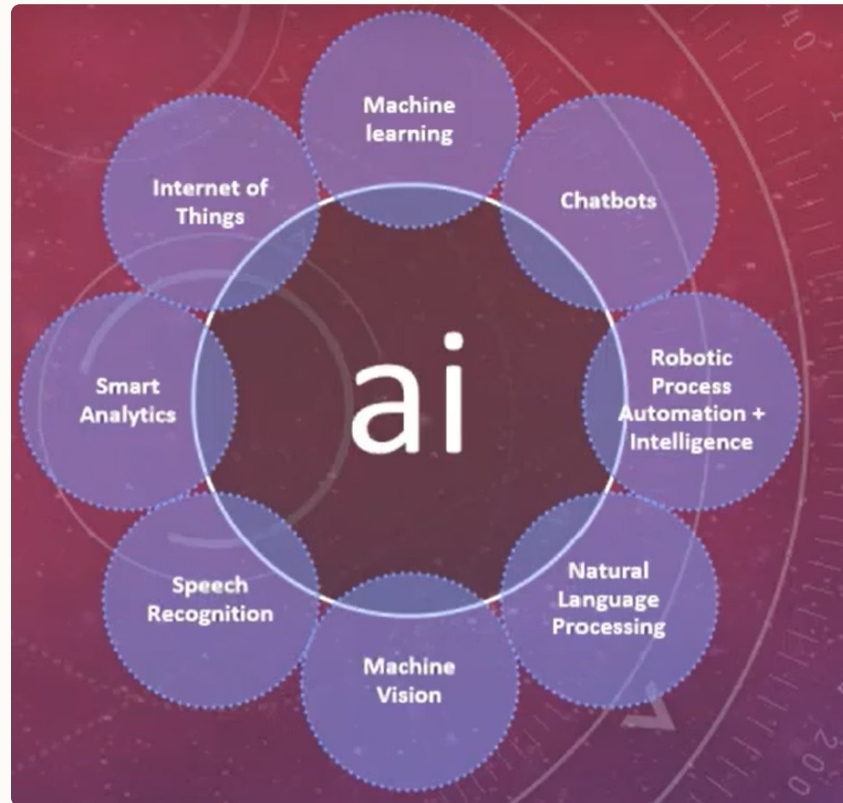


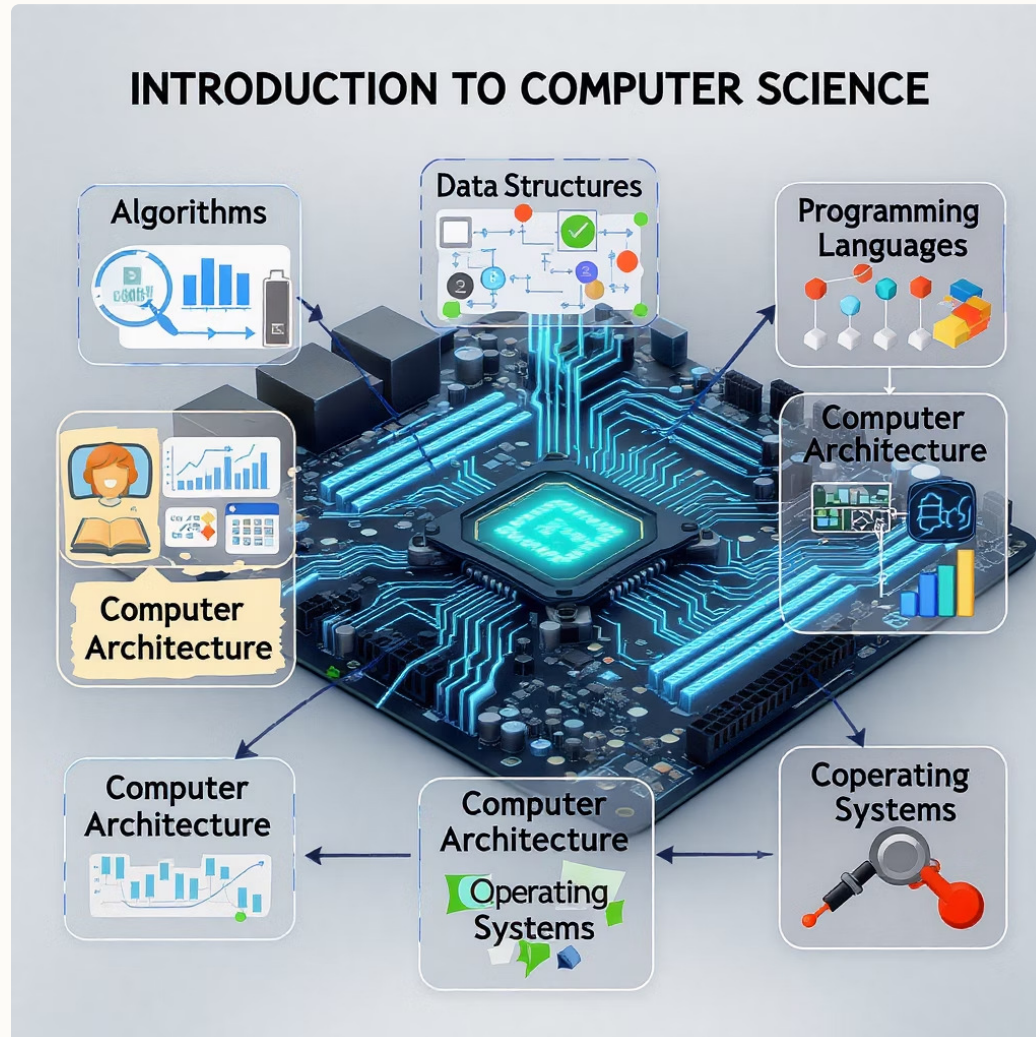


ARTIFICIAL INTELLIGENCE FOR FINANCE, ACCOUNTING & AUDIT



- ☐ **Machine Learning:** Algorithms that learn from data
 - ☐ **Chatbots:** Conversational AI interfaces
 - ☐ **Robotic Process Automation + Intelligence:** Automated workflow systems
 - ☐ **Natural Language Processing:** Text understanding and generation
 - ☐ **Machine Vision:** Image and video recognition/analysis
 - ☐ **Speech Recognition:** Audio-to-text conversion
 - ☐ **Smart Analytics:** Data-driven insights
 - ☐ **Internet of Things:** Connected device networks
- These technologies form the core components of modern AI systems.

Course outline



Why do we need AI

Will AI replace me?

Will AI stay with us or just hype?

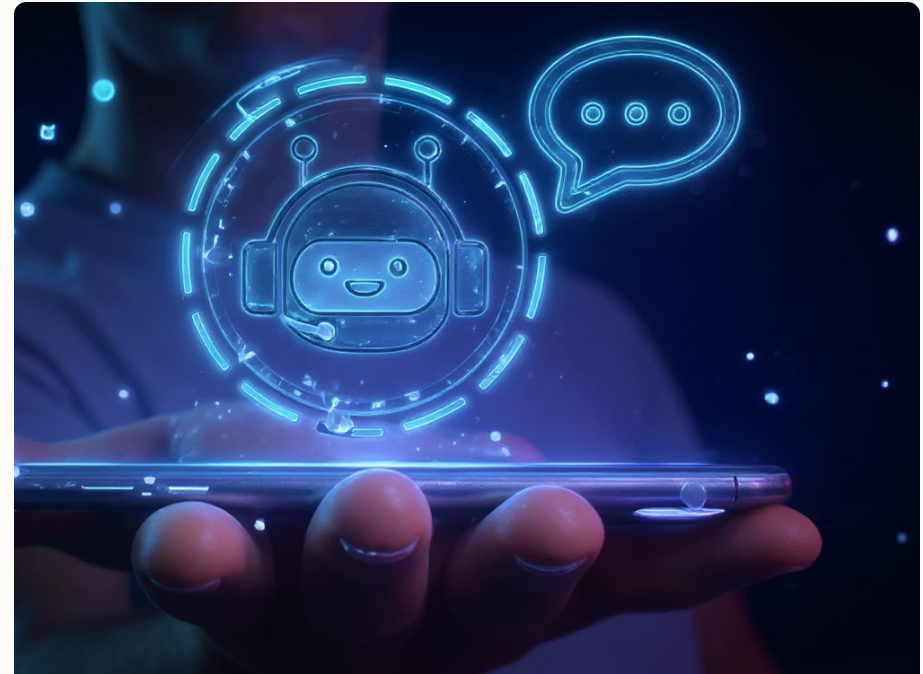
How can I re-invent myself in this digital age?

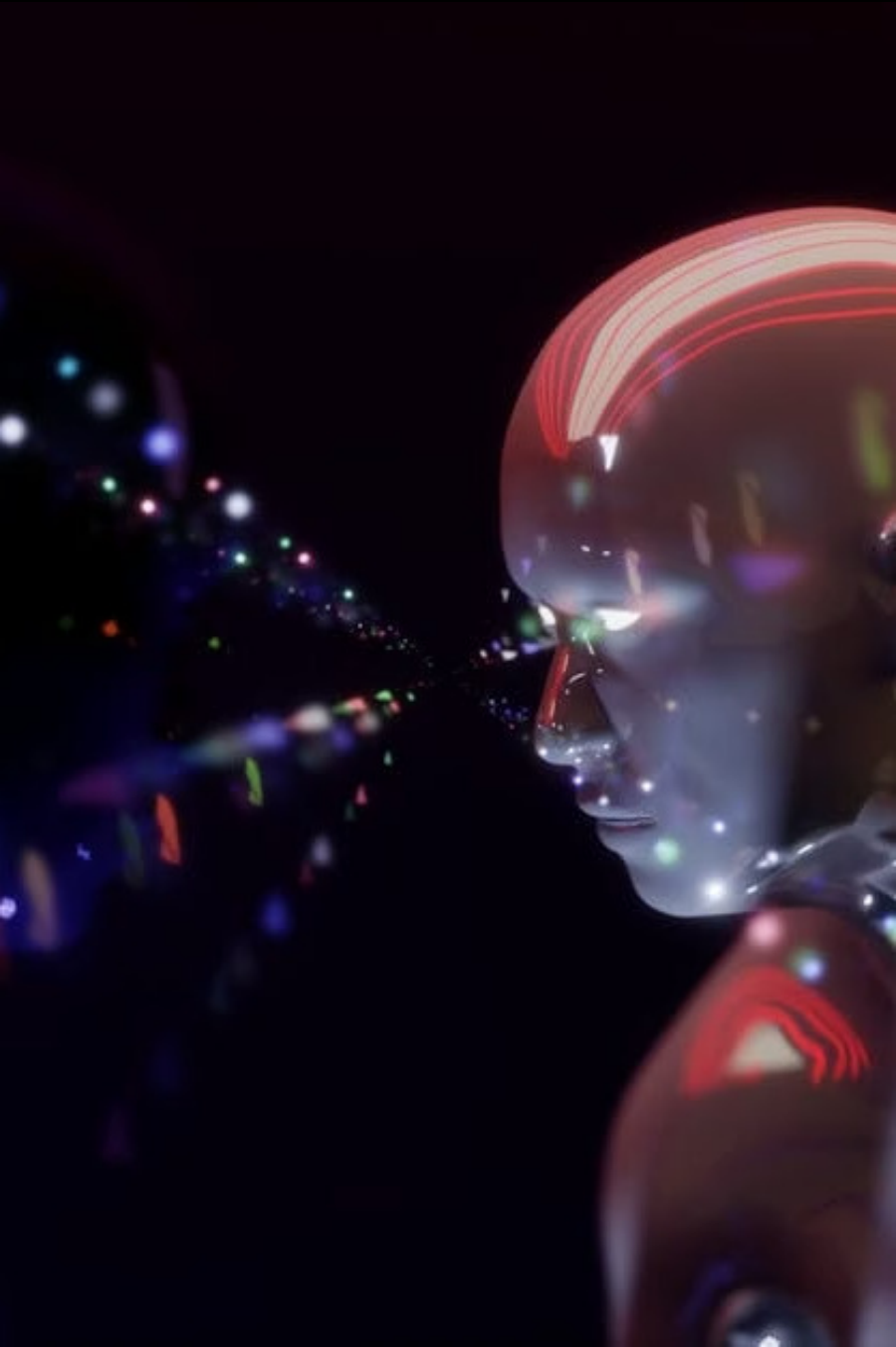
Artificial intelligence for Finance, Accounting & Audit

Course Outline

- Section 1: Introduction
- Section 2: Chatbots
- Section 3: Speech Recognition
- Section 4: Natural Language Recognition
- Section 5: Machine Vision
- Section 6: Machine Learning
- Section 7: Robot Process Automation (RPA) + Intelligence
- Section 8: Internet of things
- Section 9: Smart Analytics
- Section 10: Bringing it all together

AI tools





Introduction to AI

AI refers to the development of computer systems capable of performing tasks that typically require human intelligence. These tasks include reasoning, learning, problem-solving, perception, and language understanding.

AI encompasses various technologies, such as machine learning, deep learning, and natural language processing, which enable machines to analyze data, recognize patterns, and make decisions.

AI is a software that mimics human cognitive skills

AI can process unstructured data (e.g., images, voice, text)

Have you interacted with AI today?



Process information

See

Hear

Speak



Natural Language Processing

Machine Vision

Speech Recognition

Voice interaction

WHY AI IS ESSENTIAL IN FINANCE, ACCOUNTING & AUDIT



Overcoming Human Cognitive Limitations

As we explore the role of artificial intelligence in finance, accounting, and audit, it's important to consider the limitations of human cognition. Our brains, while incredibly complex and capable, are still subject to biases, errors, and constraints that can impact our decision-making and problem-solving abilities.

By harnessing the power of AI, we can augment and enhance our own cognitive capabilities, allowing us to tackle complex challenges with greater speed, accuracy, and objectivity. AI-powered systems can process vast amounts of data, identify patterns and trends, and make predictions that would be nearly impossible for a human to achieve on their own.

In the context of this course, we'll delve deeper into the ways in which AI can be leveraged to transform the finance, accounting, and audit domains, empowering professionals to work more efficiently, make more informed decisions, and ultimately deliver greater value to their organizations and clients.



AI addresses our natural information processing constraints and memory limitations when handling complex financial data.

AI Superior Data Processing Speed

In the world of finance, accounting, and audit, the ability to process and analyze vast amounts of data is paramount. Traditional human-driven methods can be slow, error-prone, and limited in their scope. However, the advent of artificial intelligence (AI) has revolutionized the way we approach these critical domains.

AI-powered systems possess an unparalleled capacity for data processing, capable of sifting through vast troves of financial records, transaction histories, and regulatory documents with lightning-fast speed and pinpoint accuracy. By leveraging the power of machine learning algorithms and advanced analytics, these AI-driven tools can uncover insights, identify patterns, and make predictions that would be virtually impossible for a human to achieve alone.

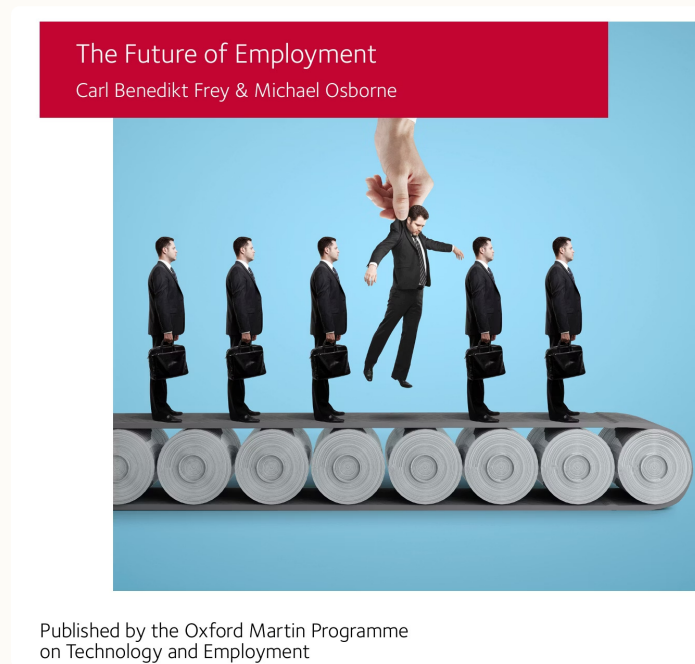
As we explore the role of AI in finance, accounting, and audit, it becomes clear that this technology is not merely a novelty, but a transformative force that can dramatically enhance the efficiency, accuracy, and strategic decision-making capabilities of professionals in these fields. By embracing the power of AI, we can unlock new levels of productivity, gain a deeper understanding of our data, and ultimately deliver greater value to our organizations and clients.



Exceptional Data Storage & Analysis

AI systems can process and store vast financial datasets while identifying patterns humans might miss.

CAN AI REPLACE ME?



The Future of Employment

Carl Benedikt Frey & Michael Osborne

Published by the Oxford Martin Programme on Technology and Employment

In their landmark 2013 study, economists Frey and Osborne analyzed 702 occupations and estimated 47% of jobs in the US were at high risk of automation.

What This Means for Finance Professionals

While routine accounting tasks face high automation risk, roles requiring complex analysis, strategic thinking, and interpersonal skills remain distinctly human. The future of finance and accounting is not about AI replacing workers, but rather about how professionals can learn to collaborate with AI systems to enhance their capabilities.

AI will likely transform finance roles rather than replace them entirely. The most successful professionals will be those who embrace AI and use it as a tool to boost their own productivity and decision-making abilities. By working alongside increasingly sophisticated AI systems, finance and accounting experts can focus on the higher-level, strategic aspects of their roles that machines cannot easily replicate.

The question isn't if AI will replace you—it's how you'll adapt to work in tandem with AI. Those who are able to adapt and leverage AI to their advantage will be best positioned to thrive in the finance and accounting careers of the future. The key is to view AI as a complement to human skills, not a replacement for them.

Did AI Start Yesterday?

Artificial Intelligence has a rich history spanning several decades:



1950s: The Birth of AI

Alan Turing proposes the Turing Test (1950) and the first AI conference is held at Dartmouth College (1956), officially coining the term "Artificial Intelligence".



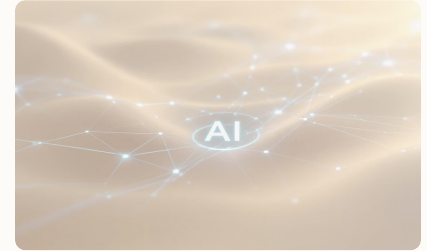
1960s-1970s: Early Development

First expert systems emerge and researchers develop programs capable of solving algebraic problems and playing chess, showing machines could mimic human logical reasoning.



1990s-2000s: AI Renaissance

Machine learning advances with the growth of the internet and big data. Deep Blue defeats world chess champion Garry Kasparov (1997), marking a milestone in computational intelligence.



2010s-Present: Deep Learning Revolution

Neural networks and deep learning transform AI capabilities. AlphaGo defeats world Go champion (2016), GPT models revolutionize natural language processing, and AI integration in finance and accounting accelerates.

Far from being an overnight phenomenon, AI has evolved through decades of research and development, with each advancement building upon previous innovations.

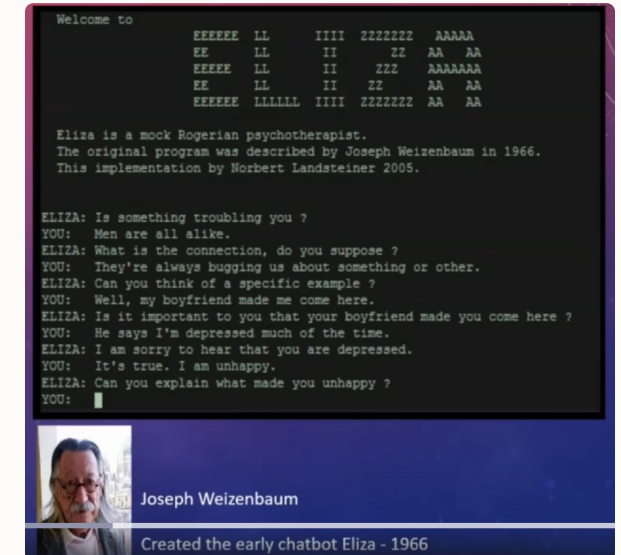
Did AI start yesterday?



Alan Turing

1950: Can a computer convince a human that it is not a computer but a real person.

Now: Can a human convince a computer that he is a real person, not a computer



Types of AI

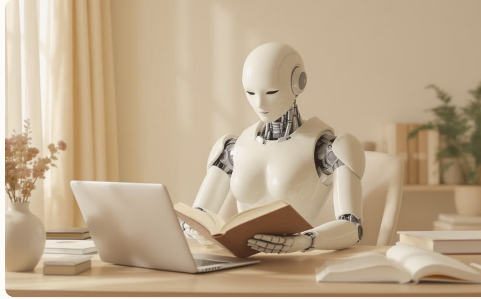


Narrow AI

Narrow AI systems are engineered to excel at specific, well-defined tasks with speed, accuracy, and efficiency that often surpasses human abilities.

Examples include self-driving cars that can navigate roads and avoid obstacles within their driving domain, but cannot perform other tasks that come naturally to humans.

While these systems excel at specialized functions, they lack the broad intelligence and adaptability that allows humans to thrive in unstructured environments.



General AI

General AI, also known as artificial general intelligence (AGI) or strong AI, is a hypothetical type of AI that would possess human-like abilities to learn, reason, and solve problems across various domains.

Unlike narrow AI, general AI would have the flexibility to transfer knowledge and skills from one area to another. This level of intelligence is not yet achievable with current technology.

As AI evolves, the distinction between narrow and general AI will likely blur, but fully autonomous, human-level general AI remains a significant challenge for researchers.



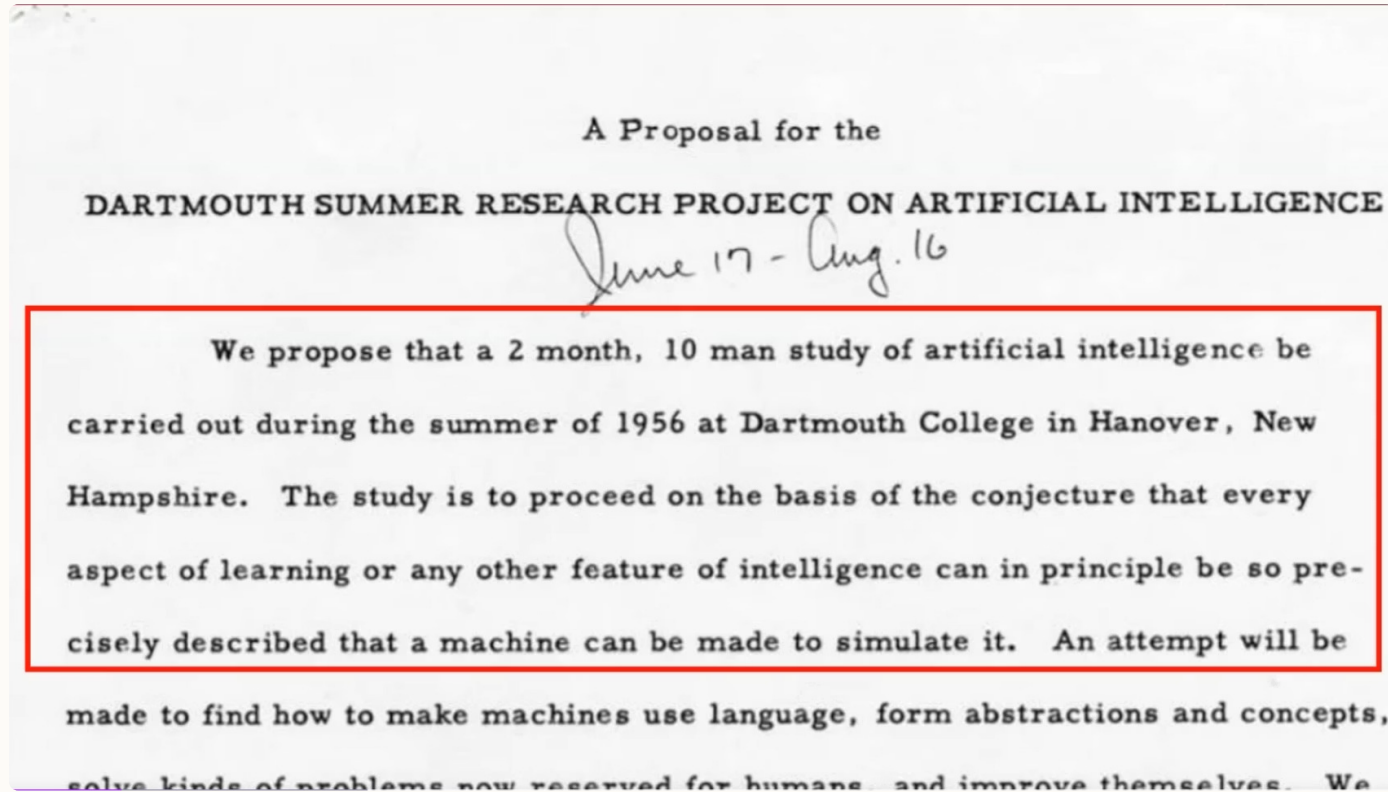
Super AI

Super AI refers to hypothetical machines or systems that would be an order of magnitude smarter than humans. This level of intelligence would far surpass current AI capabilities.

The development of Super AI remains largely theoretical at this stage, despite impressive achievements in narrow AI for specialized tasks.

Potential implications of Super AI have sparked debate - from solving humanity's greatest challenges to concerns about risks from uncontrolled, superintelligent systems. The future of Super AI remains an open question.

IS IT JUST HYPE?



We propose that a 2 month, 10 man study of artificial intelligence be carried out during the summer of 1956 at Dartmouth College in Hanover, New Hampshire. The study is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it. An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves.

TRADITIONAL ROLES		HIRING NEEDS
	Financial Planning & Analysis	▲
	Financial controller	▼
	Accounts payable	▼
EMERGING ROLES		HIRING NEEDS
	Data Scientist	▲
	Scenario Planners	▲
	Market Marker	▲
	Social behavior scientist	▲

Traditional Roles and Hiring Trends:

1. Financial Planning & Analysis

- **Hiring Need: Increasing** ▲
- Demand is growing due to its strategic importance in navigating complex financial environments.

2. Financial Controller

- **Hiring Need: Decreasing** ▼
- Automation and advanced analytics are reducing the reliance on this role.

3. Accounts Payable

- **Hiring Need: Decreasing** ▼
- Routine tasks are being automated, cutting down on manual roles.

Emerging Roles and Hiring Trends:

1. Data Scientist

- **Hiring Need: Increasing** ▲
- High demand for data-driven insights across industries.

2. Scenario Planners

- **Hiring Need: Increasing** ▲
- Critical for risk management and strategic foresight in uncertain times.

3. Market Marker

- **Hiring Need: Increasing** ▲
- Needed to interpret market dynamics and influence positioning.

4. Social Behavior Scientist

- **Hiring Need: Increasing** ▲
- Growing importance in understanding consumer behavior and societal trends.

Key Take aways

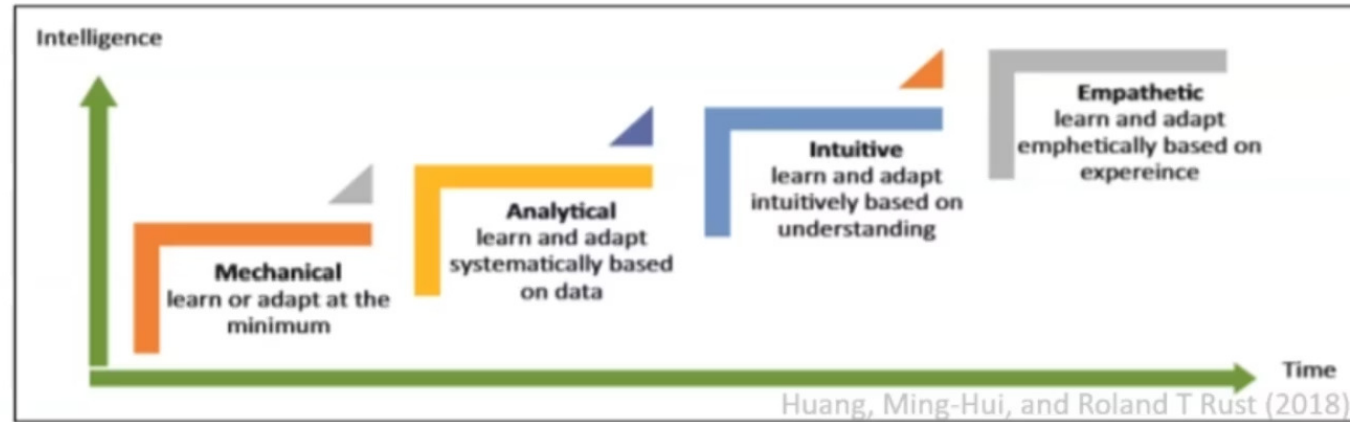
Organizations are shifting from routine, transactional roles to strategic, analytical, and predictive roles that leverage data, foresight, and behavioral insights. Adapting skill sets to align with these emerging demands is not optional—it's essential

Key Takeaways: AI's Impact on Finance Functions

WHAT ARE THE AI TECHNOLOGIES	WHAT CAN BE TRANSFORMED BY AI
 MACHINE LEARNING Using iterative algorithms to learn, performing and refining tasks from experience	• Cash reconciliation • Intercompany reconciliation • Performance forecasting • Judgment-based journey entry validation • Spend optimization • Payable/Receivables behavioral analysis • Marketing spend analysis by SKU and channel
 ROBOTIC PROCESS AUTOMATION (RPA) Using software to automate computer-based process	• Finance transaction processing • Journal Entry validation • Cross functional workflow management • Control and compliance workflow • Revenue management
 VIRTUAL AGENTS Communicates in natural language with humans enabling them to answer questions as a human would and perform business process	• Payments Term Rationalization for p2p and OTC • Control /exceptions management (eg rejection resolution) • Finance (internal/external) query management
 COMPUTER VISION Detecting and identifying words and phrases in spoken language	• Real-time Inventory Accounting • Real-time Fixed Asset Maintenance/Adjustment • Virtual Search • Contract and billing compliance
SPEECH Detecting and identifying words and phrases in spoken language	• Finance Helpdesk
TEXT Text analytics combines linguistic knowledge with statistical methods	• Automatic Contract Management • Purchase Order Management • Reporting analysis generating (natural Language generation for standard analytical reports

Companies that fail to integrate AI risk falling behind in speed, accuracy, and insight generation.

1. AI is Driving a Massive Shift from Manual to Intelligent Automation
 - Routine, repetitive finance tasks (like reconciliations, journal entries, and transaction processing) are being rapidly automated using Machine Learning and RPA.
 - Human effort is being reallocated from data entry to data interpretation and strategy.
2. Decision-Making is Becoming More Predictive and Data-Driven
 - Machine Learning and NLP are enabling forward-looking insights through forecasting, behavioral analytics, and natural language reporting.
 - Finance leaders must become comfortable interpreting AI-generated insights, not just historical numbers.
3. Customer & Employee Interactions Are Becoming Conversational
 - Virtual Agents and Speech AI are making finance service desks, helpdesks, and queries faster and more accessible—24/7.
 - This reduces bottlenecks and improves stakeholder satisfaction.
4. Unstructured Data Is No Longer a Bottleneck
 - Computer Vision and Text Analytics unlock value from invoices, contracts, scanned docs, and email threads.
 - This means automation isn't limited to structured spreadsheets—it now includes documents and language.
5. The Role of Finance Is Evolving
 - Finance professionals are transitioning from number crunchers to strategic advisors.
 - Skills in AI oversight, data literacy, and scenario modeling are becoming core requirements.
6. Not If—But How You Use AI Will Define Competitive Advantage
 - AI adoption in finance isn't a question of if, but how fast and how well you implement.
 -



The Evolution of Financial Roles:

Finance professionals are rapidly evolving from traditional workpaper preparation to becoming strategic business partners.

They now focus on delivering high-value insights, critical financial analysis, and forward-looking guidance that even the most sophisticated AI systems cannot replicate. This transformation demands a new blend of technical expertise, business acumen, and creative problem-solving skills.

CRITICAL THINKING

is a manner of thinking that employs curiosity, creativity, skepticism, analysis, and logic, where:

Curiosity means wanting to learn,

Creativity means viewing information from multiple perspectives,

Skepticism means maintaining a "trust but verify" mind-set,

Analysis means systematically examining and evaluating evidence, and

Logic means reaching well-founded conclusions.

AI APPLICATIONS OVERVIEW



Chatbots

Automated conversation systems that interact with users through text or voice interfaces.



Natural Language Processing

Technology that allows computers to understand, interpret, and generate human language.



Machine Learning

Systems that learn and improve from experience without being explicitly programmed.



Machine Vision

Technology that enables computers to see, identify and process visual information like humans do.



Robotic Process Automation + Intelligence

Software robots that automate routine business processes with added cognitive capabilities.



Speech Recognition

Technology that converts spoken language into text and enables voice-controlled applications.



Smart Analytics

Advanced data analysis tools that uncover patterns and generate actionable insights.



Internet of Things

Network of physical objects embedded with sensors and software to connect and exchange data.

- + learn how firms are applying AI in accounting/auditing/finance
- + hands on exposure to different AI development tools
- + bonus automation techniques

Will AI replace accountants?

This question often sparks debate, but the simple answer is no.

AI is a powerful tool, but it is not a substitute for human intelligence. While it excels at processing data and automating repetitive tasks, it cannot replicate the contextual understanding, ethical judgment, and personal engagement that accountants bring to their roles. Activities such as interpreting complex financial scenarios, negotiating with clients, and offering strategic advice require emotional intelligence, creativity, and critical thinking—qualities unique to humans.

Rather than replacing accountants, AI is transforming the profession. It shifts the focus from routine number-crunching to more analytical and advisory roles, where human expertise is indispensable. Accountants who embrace AI tools are better equipped to provide strategic insights and drive business growth.

This evolution also brings opportunities for professional development. As AI becomes integral to accounting, professionals can enhance their skillsets by mastering AI-driven tools, data analytics, and emerging financial technologies. Many organizations are investing in training programs to ensure their teams stay competitive and well-prepared for the future.

Far from making accountants obsolete, AI is empowering them to take on more dynamic and strategic responsibilities, strengthening their role.



PREDICTIVE AND GENERATIVE AI

What is generative artificial intelligence?

- Generative artificial intelligence is a type of artificial intelligence system that produces text, images, or other media in response to prompts.
- This technology uses machine learning to analyze the patterns and structures of its input training data.
- It then creates new data with similar characteristics.
- The crucial point to note is that generative AI derives its output from existing data.
- This can result in problematic responses if the training data is biased, incorrect, or outdated.
- As we all know, not everything on the internet is true.

Predictive AI

- There is another type of AI called **predictive AI**.
- Predictive AI uses data analysis, machine learning, artificial intelligence, and statistical models to find trends and patterns and predict future events or behavior.
- Companies can use predictive AI to spot trends, forecast risks, identify solutions in response to those risks, and improve decision-making.

Future of AI in Finance

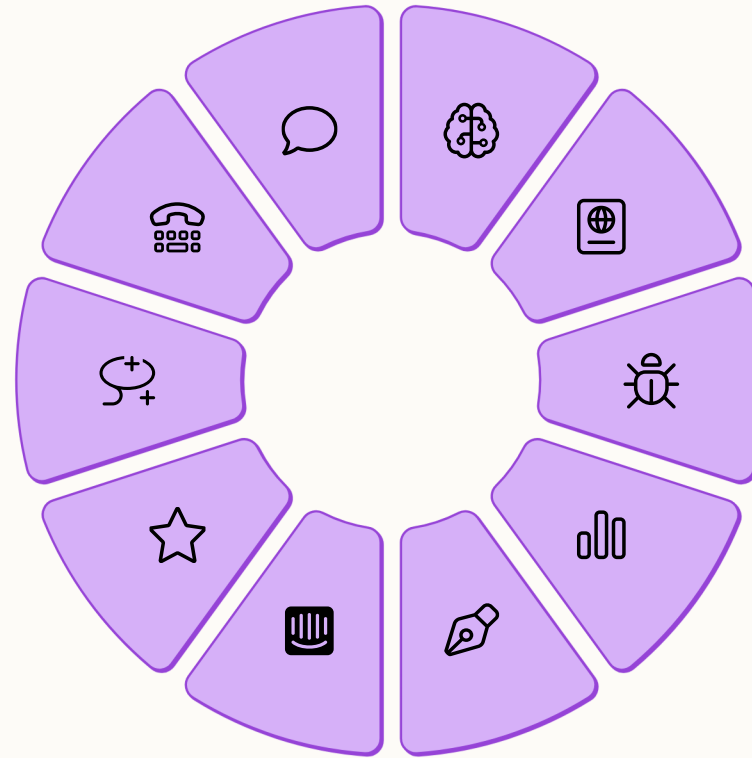
Increased efficiency and cost savings

Targeted communications

Automation of repetitive tasks

Fraud detection

Improved customer experience



Improved insights and decision-making

Document analysis

Financial report generation

Financial analysis and forecasting

Improved compliance



AI in Finance, Accounting, and Audit

Artificial Intelligence (AI) is revolutionizing finance, accounting, and auditing by simulating human intelligence in machines that think, learn, and decide. This presentation explores AI's definitions, types, and key subfields including Machine Learning, Natural Language Processing, and Robotic Process Automation. We will examine AI applications in key financial domains and discuss both benefits and challenges. Finally, real-world examples illustrate how AI is transforming these professions for faster, smarter, and more accurate processes.



Understanding AI and Its Core Types

Narrow AI

AI designed for specific tasks like fraud detection, chatbots, or credit scoring.

General AI

A theoretical form of AI that would match human cognitive abilities across any domain.

AI Subfields

- Machine Learning - data-driven prediction and pattern recognition
- Natural Language Processing - understanding human language
- Computer Vision - interpreting images and videos
- Robotic Process Automation - automating repetitive workflows

AI Applications in Finance

AI is transforming finance through real-time fraud detection, enhanced risk assessment, lightning-fast trading algorithms, and personalized customer service solutions.

Fraud Detection

Machine learning algorithms monitor transactions in real-time, detecting anomalies that suggest fraudulent activity.

Credit Scoring & Risk

AI uses alternative data like social media footprints for dynamic credit risk evaluation beyond traditional metrics.

Algorithmic Trading

AI-powered bots analyze market trends instantly, placing trades within milliseconds to optimize returns.

Personalized Services

Chatbots provide tailored financial advice and customer service, improving engagement and satisfaction.

Transforming Accounting with AI



Routine Task Automation

Robotic Process Automation streamlines invoice processing, journal entries, and reconciliations.



Data Entry & Classification

Machine learning models auto-classify transactions, reducing manual errors and time spent on data management.



Expense Management

AI detects unusual or duplicate expenses to improve audit readiness and cost control.



Forecasting

Advanced algorithms predict future revenues, expenses, and cash flows for strategic planning.



AI's Role in Modern Auditing

Continuous Auditing

Real-time transaction analysis replaces traditional periodic audits for greater accuracy.



Anomaly Detection

Automated identification of irregular patterns indicates potential fraud or compliance issues.



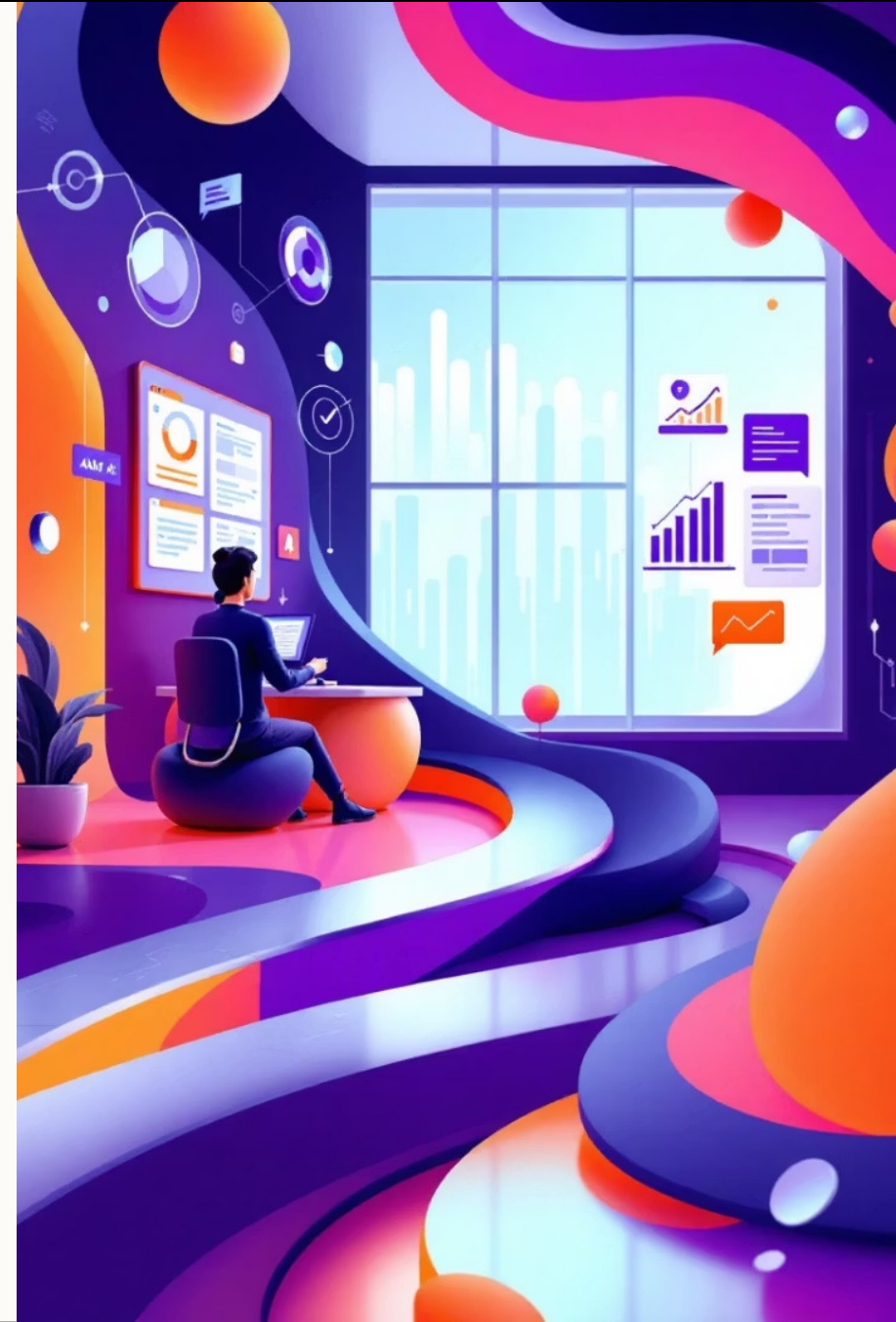
Document Review

Natural Language Processing helps extract key insights from contracts and invoices swiftly.



Full Population Testing

AI enables audit of 100% of data instead of limited sampling, enhancing reliability.



Benefits and Challenges of AI in Financial Domains

Benefits

- Increased operational speed and efficiency
- Reduction in human error
- Improved decision-making with data insights
- Enhanced fraud detection and regulatory compliance
- Long-term cost savings

Challenges & Risks

- Data privacy and cybersecurity concerns
- Algorithmic bias impacting fairness
- Opaque "black box" AI limiting transparency
- Potential job displacement in repetitive roles
- Regulatory and ethical dilemmas requiring oversight



Emerging AI Trends and Future Outlook

1

AI + Blockchain

Secure, immutable transaction records with automated verification support transparency and trust.

2

Generative AI

Automates creation of financial reports and analyses, enhancing productivity and creativity.

3

Regulation

Governments introduce frameworks such as the EU AI Act to ensure responsible AI adoption.

4

Explainable AI

AI systems that deliver transparent, interpretable outputs for audit and compliance scrutiny.



Real-World AI Applications in Finance and Audit



PwC & Deloitte

Automated document review and risk analysis platforms improve audit efficiency.



JPMorgan Chase

COIN platform uses AI for rapid legal contract review, reducing time from hours to seconds.



KPMG Ignite

AI-driven audit and tax analytics platform enhances insights and accuracy.



Mastercard & Visa

Real-time AI fraud monitoring boosts security and customer confidence.

Generative AI

Opportunities

-  **Content Generation**
Content creation based on a set of input examples, documents, data and/or a specific theme or topic
-  **Summarization**
Concise, coherent summarization of long, complex text
-  **Q&A**
Articulate natural language responses to queries
-  **Analysis**
Logical analysis based on reasoning (inference, deduction, and comparison)
-  **Image Generation**
Creation of images and videos from text prompts
-  **Extraction**
Creation of specific information from a given input, such as a company accounting policy from accounting guidance

Risks

-  **Privacy**
The potential for confidential data to be breached through GenAI's access to vast amounts of information
-  **Cybersecurity**
Attacks and takeovers by unauthorized parties
-  **Fraud**
Phishing, forgery, deepfakes
-  **IP Infringement**
Infringement of IP and proprietary content accessible by large language models
-  **Hallucinations**
Range from biases to random false information
-  **Ethical Concerns**
Ethical blind spots, accountability, job elimination

Tools for AI Tools for Competitive Research

- **SimilarWeb** - Analyzes competitor website traffic patterns, user engagement metrics, and detailed audience demographics for strategic insights
- **Crayon** - Continuously monitors competitor marketing campaigns, pricing strategies, and product launches to identify market opportunities
- **Brandwatch** - Provides real-time social media sentiment analysis and comprehensive brand perception tracking across digital channels
- **ChatGPT & Claude AI** - Efficiently summarizes complex industry reports, identifies emerging market trends, and delivers actionable competitive intelligence
- **Advanced AI-powered research tools** enable businesses to gather critical competitive insights in real-time, supporting data-driven decision making and strategic positioning
- **SimilarWeb** - Tracks competitor website traffic & audience demographics
- **Crayon** - Monitors competitor marketing strategies & product updates
- **Brandwatch** - Analyzes social media sentiment & brand perception
- **ChatGPT & Claude AI** - Summarize industry reports & market trends
- **AI-powered tools** help businesses gain insights instantly and stay ahead

AI for Risk Assessment in Strategy

- Every strategic business decision inherently carries risk—AI provides powerful tools to identify, quantify, and mitigate uncertainty
- AI continuously analyzes critical factors:
 - Economic indicators - Detecting market volatility patterns and predicting downturns months before traditional methods
 - Supply chain vulnerabilities - Proactively identifying potential disruptions through global data monitoring and scenario modeling
 - Regulatory landscapes - Tracking emerging compliance requirements across jurisdictions to prevent costly penalties
- Organizations leveraging AI-powered risk assessment demonstrate 30-40% fewer strategic missteps and significantly improved decision confidence

AI in Action

- Business

AI in Action - Business Success Stories

- Tesla - Leverages advanced AI algorithms to optimize manufacturing efficiency, quality control systems, and autonomous driving capabilities resulting in 30% production improvements
- Amazon - Implements sophisticated AI systems across pricing optimization, inventory forecasting, and logistics routing that have reduced delivery times by 25% while increasing accuracy
- Netflix - Utilizes predictive AI algorithms to analyze viewing patterns, forecast content trends, and personalize recommendations, driving 80% of viewer engagement
- Leading organizations integrating AI into core business functions achieve 40% greater operational efficiency and gain significant competitive advantages in their respective industries

- Tesla - Uses AI to optimize production & self-driving technology

- Amazon - AI powers pricing, inventory,

- and logistics
- Netflix - AI predicts content trends &

- AI helps top companies lead their industries by making smarter decisions

