THE RISE OF THE CHATBOTS

AI & ChatGPT ARE POISED TO DISRUPT THE WORKPLACE

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65 YEARS
OF EXCELLENCE *and* COUNTING
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Agenda

- Understand the fundamentals of Artificial Intelligence
- Gain information about chatbot-AI technologies such as ChatGPT
- Explore workplace use cases and personnel impacts of AI
- Learn about adoption considerations for AI including risks and mitigation approaches

Introductions

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What is Artificial Intelligence?

> *Can machines think?*

At its simplest form, artificial intelligence is a field, which combines computer science and robust datasets, to enable problem-solving.

Human Approach

- Systems that think like humans
- Systems that act like humans

Ideal Approach

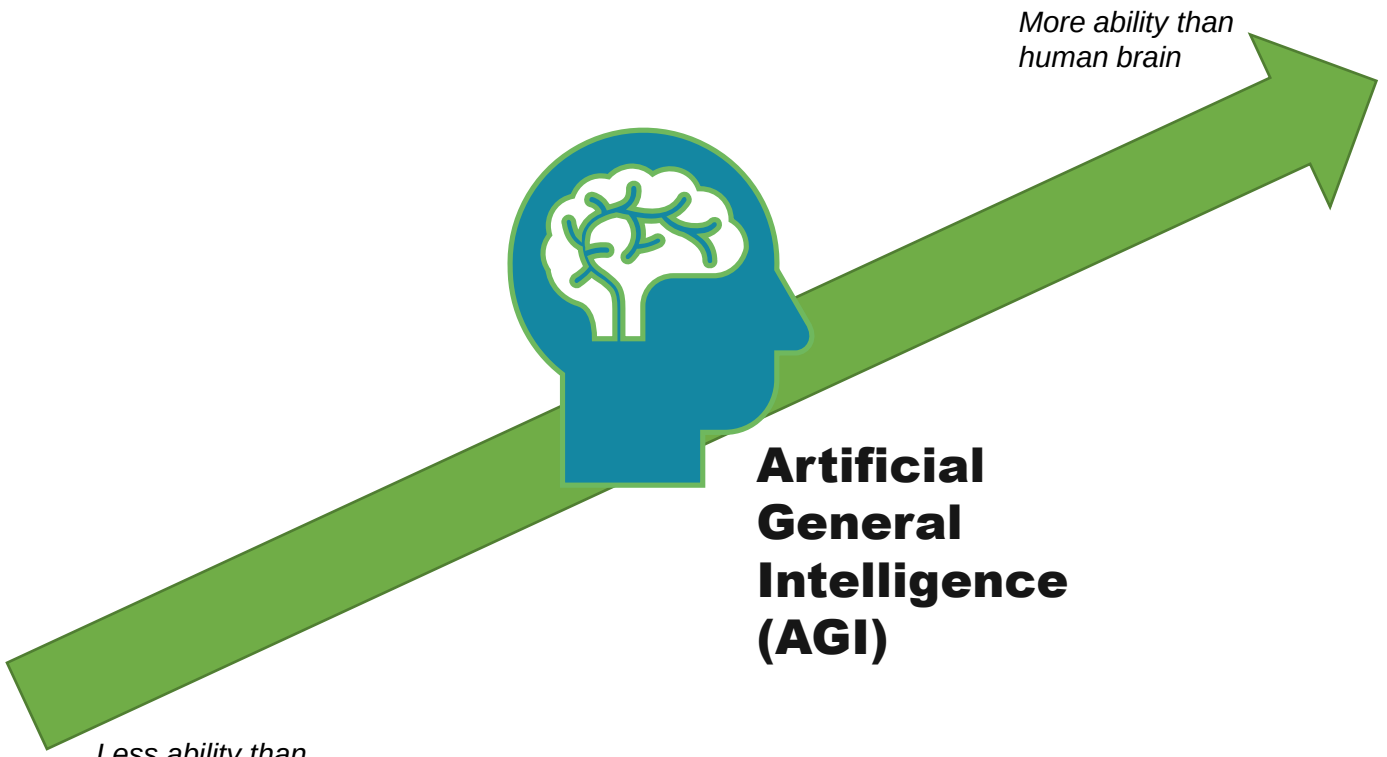
- Systems that think rationally
- Systems that act rationally

Source: Artificial Intelligence: A Modern Approach, 4th US ed.; Stuart Russell and Peter Norvig

2001: A Space Odyssey (1968)

- HAL is initially considered a dependable member of the crew, maintaining ship functions and engaging genially with his human crew-mates on an equal footing.
- However, as time progresses, HAL begins to malfunction in subtle ways and, as a result, the decision is made to shut down HAL in order to prevent more serious malfunctions.
- Astronauts consider disconnecting HAL's cognitive circuits when he appears to be mistaken in reporting the presence of a fault in the spacecraft's communications antenna.
- They attempt to conceal what they are saying but are unaware that HAL can read their lips. Faced with the prospect of disconnection, HAL decides to kill the astronauts in order to protect and continue his programmed directives.

Types of Artificial Intelligence



Machine learning

Machine learning is a branch of artificial intelligence (AI) and computer science which focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy.

Supervised learning

"learns" from the training dataset by iteratively making predictions on the data and adjusting for the correct answer.

Semi-supervised learning

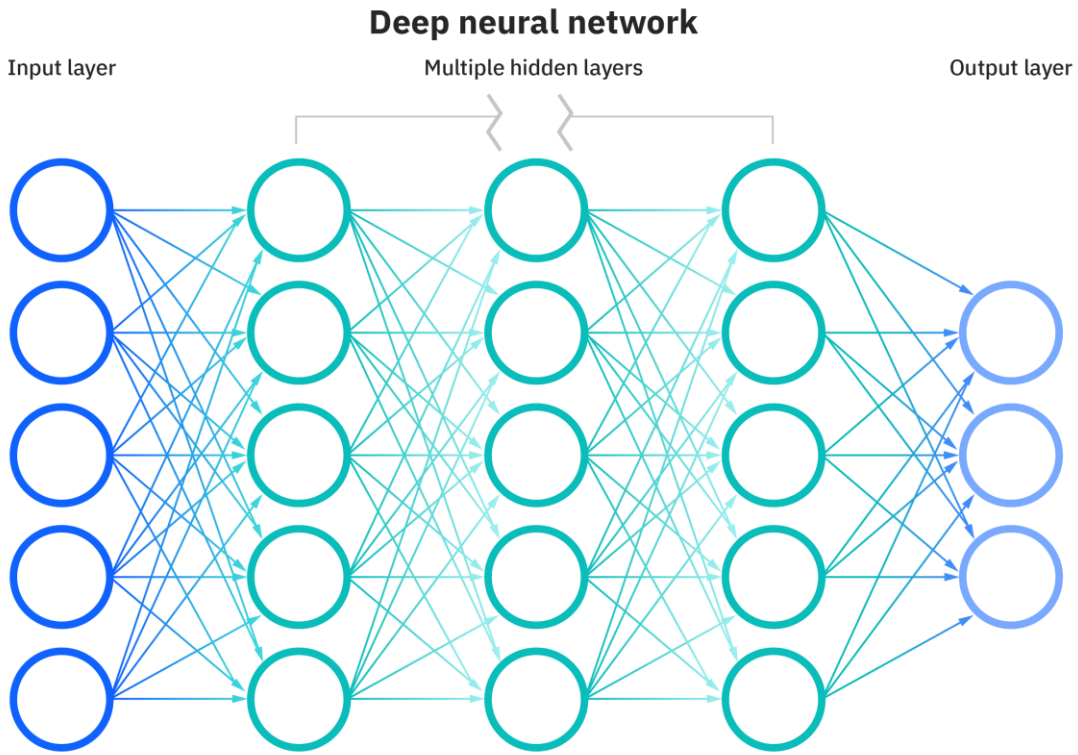
Unsupervised learning

Work on their own to discover the inherent structure of unlabeled data.

Deep learning

- It can ingest unstructured data in its raw form (e.g., text, images), and it can automatically determine the hierarchy of features which distinguish different categories of data from one another.

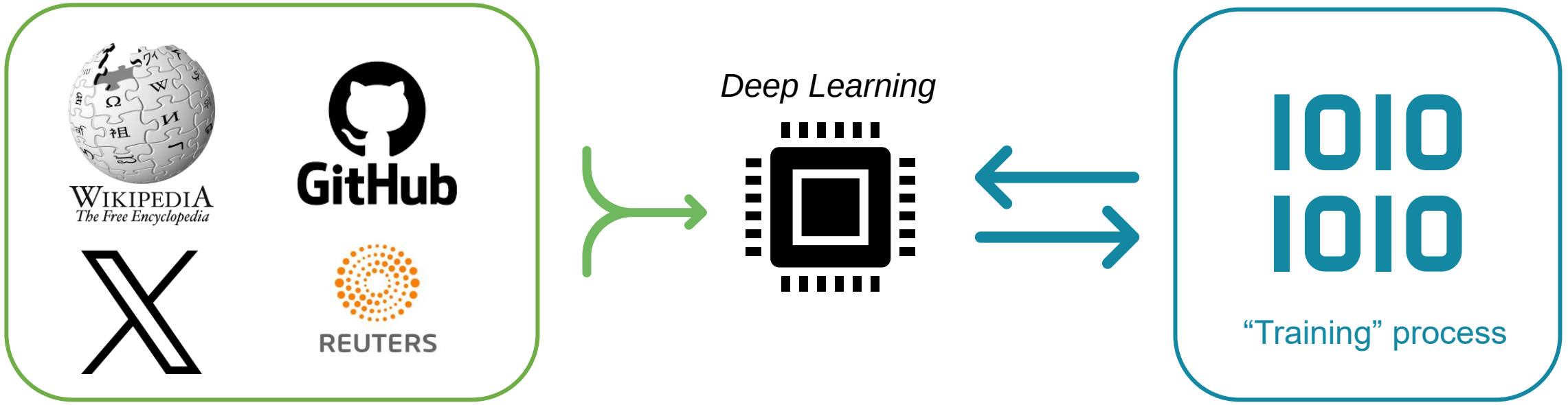
- Unlike machine learning, it doesn't require human intervention to process data, allowing us to scale machine learning in more interesting ways.



Source: IBM

Generative AI

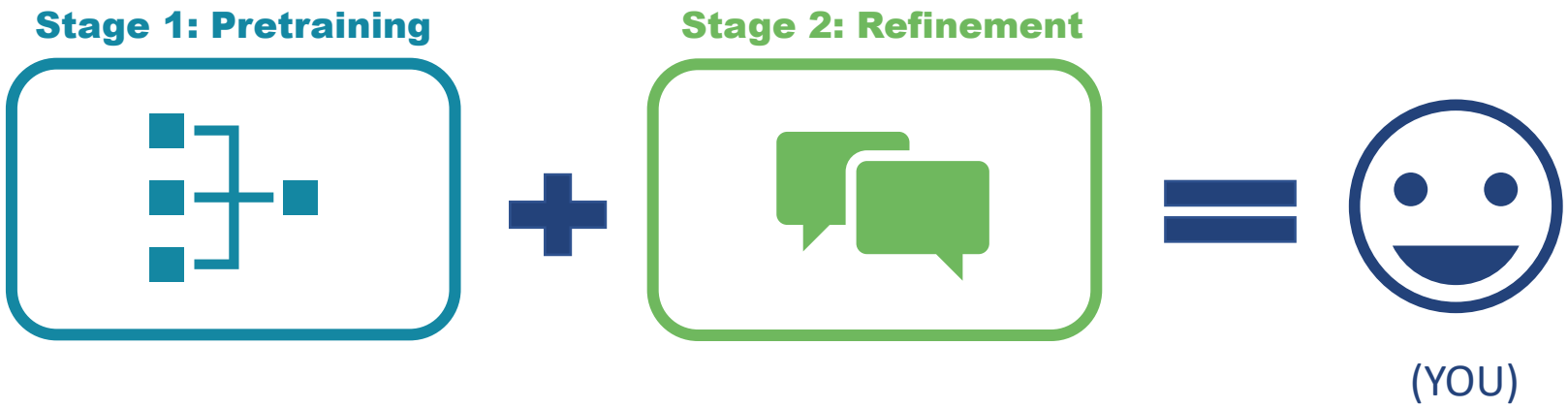
Deep-learning models that can take large sets of unstructured raw data and “learn” to generate statistically probable outputs when prompted.



- Requires significant computing infrastructure
- There may be latency due to processes and sampling speed
- Requires access to large amounts of data

Chatbots: It's all about the G-P-T

Generative **P**re-trained **T**ransformer is a type of large language model (LLM) and a prominent framework for generative artificial intelligence.



Chatbots such as ChatGPT interact in a conversational way. The dialogue format makes it possible for ChatGPT to answer follow-up questions, admit its mistakes, challenge incorrect premises, and reject inappropriate requests.

Generative AI in business

28%
Automation of Business Processes

INCREASE PRODUCTIVITY

22%
Conversational AI or Virtual Assistants

ENHANCE CUSTOMER SERVICE

22%
Financial Planning and Analysis

IMPROVE BUSINESS INTELLIGENCE

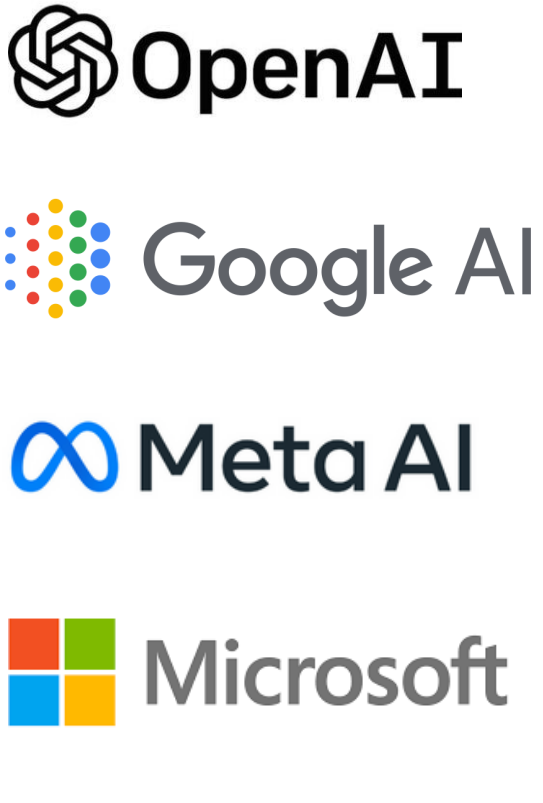
26%
Business Analytics or Intelligence

ENHANCE DATA ANALYTICS

Statistics cited from IBM Global AI Adoption Index 2022 – Organizational use of AI

From ideas to inception

- ChatGPT (and similar) are provided primarily as third-party services by leading vendors
- Due to the complexity of operation and required computing, DIY is not practical
- Microsoft (OpenAI partner) working to bring AI to the Office and Bing platforms
- “Private” ChatGPT services are on the rise with such services offered as a cloud solution.
- AI capabilities being embedded into enterprise systems such as finance and HR



So you want to use AI, now what?

Getting started

- Staffing
  - Skills and talent
  - Partnerships with Academia, Non-for-profits, and Labs
- Determine the problem you want to solve
  - Start with something simple
    - Descriptive: What happened?
    - Diagnostic: Why did it happen?
    - Predictive: What will happen?
    - Prescriptive: What is the optimal business decision?
- Rely on your data

Things to consider

- Governance
- Ethics
- Collaboration
- Education and talent
- Privacy and Security
- Accessibility and Equity
- Data
- Planning
- Pilot project
- Regulatory
- Community Engagement
- Legal

Sample use cases-Chicago

- **Traffic Patterns**
  - Sensors monitoring air quality, sound and vibration (to detect heavy vehicle traffic)
- **Air quality**
  - Sensors monitoring air quality and temperature can be used to suggest the healthiest and unhealthiest walking times and routes through the city, or to study the relationship between diseases and the urban environment
- **Urban Flooding**
  - Real-time detection of urban flooding can improve city services and infrastructure to prevent property damage and illness
- **Beach Water E.coli**
  - Sensors in the beach water to determine the E.coli level
  - Notify residents of beach closures

Sample use cases - Illinois

- **Hinsdale High School District 86 (IL) created an AI policy for students in an attempt to stop plagiarism.**
  - The policy states that students who use AI for their work and represent it as their own are cheating and in violation of school rules.

- **The state of Illinois utilized a virtual agent to relieve unemployment service demand during the COVID-19 pandemic.**
  - The virtual agent answered 3.2 million inquiries in the first two weeks.
  - Its success has encouraged the department to explore other ways AI could be beneficial.

Sample use cases-other states

- **The state of Mississippi, the state of Utah, Los Angeles, and Las Vegas are using Amazon Echo's "Alexa" to help answer citizens' questions.**
  - Expiration dates on drivers/fishing licenses, contact info for different departments, random state facts, sample driver's license test, public meeting time/location, and more.
  - Relatively affordable and easy to develop.

- **The Minnesota Pollution Control Agency**
  - Using artificial intelligence and analytics to import real-time **weather information**, crunch the numbers and then develop a basic analysis.

Sample use cases-other states

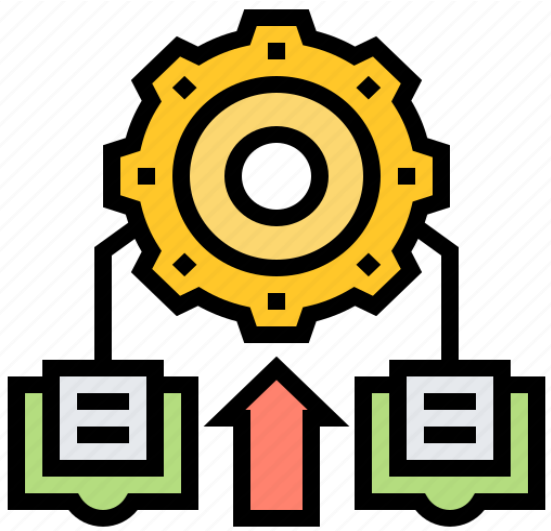
- **Maryland has announced a $50 million upgrade to their aging traffic signals.**
  - The new traffic signals will be able to respond to traffic flow and conditions immediately, reducing travel times by 10-15 percent.

- **Vermont is also using AI for several projects including modeling for pavement.**
  - Predicting with 85% accuracy how long a road treatment will last, **predicting bridge deterioration** using various models looking at over 100 different factors, and for **asset management** identifying sign locations to prepare for the use of autonomous vehicles.

AI applications

- **Plan review process automation**
  - Expedites the workflow of the plan reviewer by providing an automated assessment of a project for enhanced efficiency.
  - Improves accuracy and consistency on how we review the planning, zoning, and building codes

- **Adopters**
  - City of Gainesville Florida and the University of Florida
    - autoreview.ai
  - Design Professionals and Plan Reviewers
    - Codecomply.ai (Fall 2023)

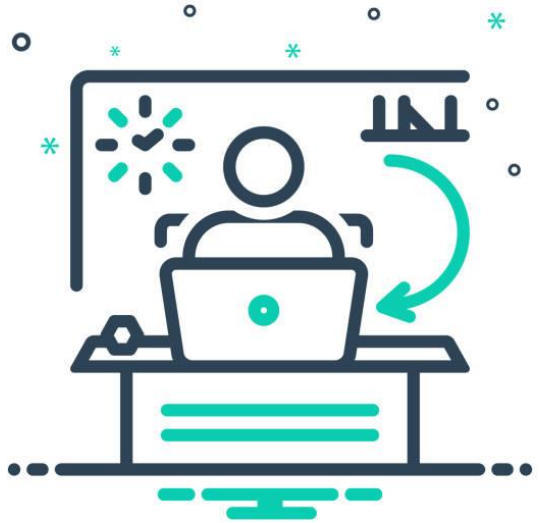


Risks

- Data privacy & confidentiality
- Ethical outcomes & model bias
- Fabricated & inaccurate outputs
- Cyber fraud
- Copyright & intellectual property infringement
- Staffing considerations

Back to the office, now what??

- ❑ Schedule a meeting with IT
- ❑ Think of a small problem to solve
- ❑ Examine your data sources
- ❑ Determine staffing readiness
- ❑ Perform a technology capabilities inventory
- ❑ Refer to our presentation for guidance



Final thoughts…

It’s an iterative process

The possibilities are endless

If you panic, reach out to us!!!!

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