

IBM AI course (MOD 1)

- What is artificial intelligence?
 - ability of a machine to learn patterns and make predictions.
 - AI cannot replace human decision, instead, AI adds value to human judgment.
- **how would you describe what AI does?**
 - AI takes all kinds of data as input and tries to recognize patterns and make the correct prediction with the highest accuracy possible. and at the same time also helps humankind to make better decisions and enhance human intelligence.
- three levels of prediction that AI can make
 - Narrow
 - Broad
 - General
- what is the difference between AI and augmented intelligence?

Aspect	AI	Augmented Intelligence
Goal	Automate tasks and mimic human intelligence.	Enhance human capabilities and decision-making through AI

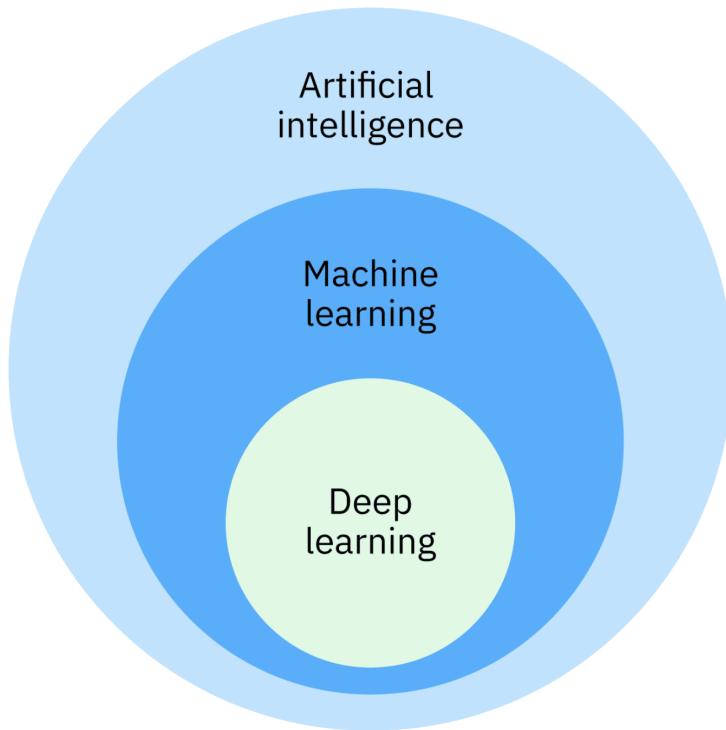
		assistance.
Human Involvement	Minimal human intervention; operates autonomously.	Relies on human-machine collaboration and human control.
Decision-Making	Often makes decisions independently.	Assists humans in decision-making with insights and recommendations.
Autonomy	Emphasizes autonomy in operation.	Requires human control and guidance.
Examples	Autonomous vehicles, chatbots, image recognition.	Business intelligence tools, medical diagnostics, language translation.
Use Cases	Used for automation, prediction, task-specific applications.	Applied where human expertise is crucial, enhancing human performance.
Role in Society	May raise concerns about job displacement.	Preserves jobs and empowers human decision-makers.

- machine vs human

machine	humans
ingestive data (means large data can be processed in shorted amount of time)	Generalization of data be done easily by humans
receptive task	Creativity is something that only humans have
accurate data(accuracy will be quite high in machine case)	emotional intelligence is something which humans have but machine don't

- WHAT DOES AI DO ?

AI machines are advanced calculators that perform tasks like machine learning and deep learning by processing data through complex calculations inspired by the human brain's neural networks. They don't think but excel at sophisticated calculations.



- Imagine you are given the job of sorting items in the meat department at a grocery store. You realize that there are dozens of products and very little time to sort them manually. How could you use artificial intelligence, machine learning, and deep learning to help with your work?

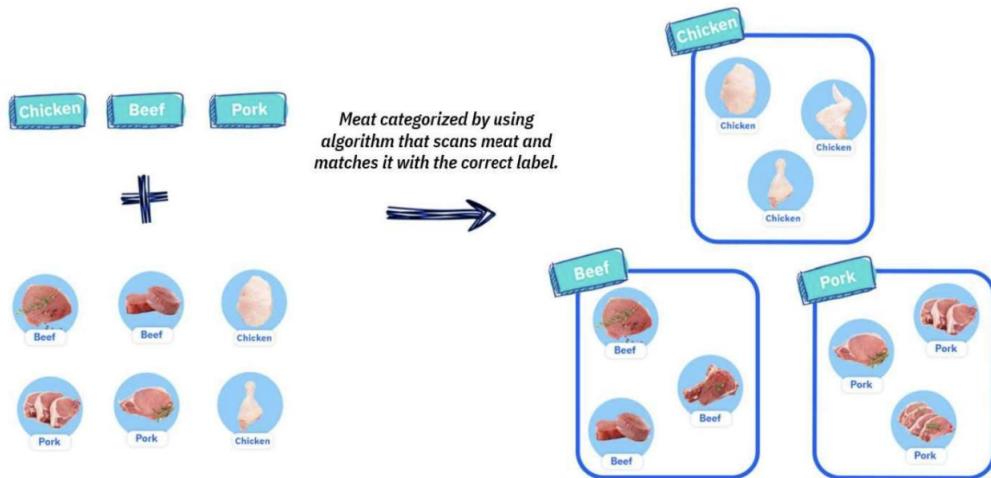
▼ AI

To separate the chicken, beef, and pork, you could create a programmed rule in the format of if-else statements. This allows the machine to recognize what is on the label and route it to the correct basket.

A programmed rule might look something like this:

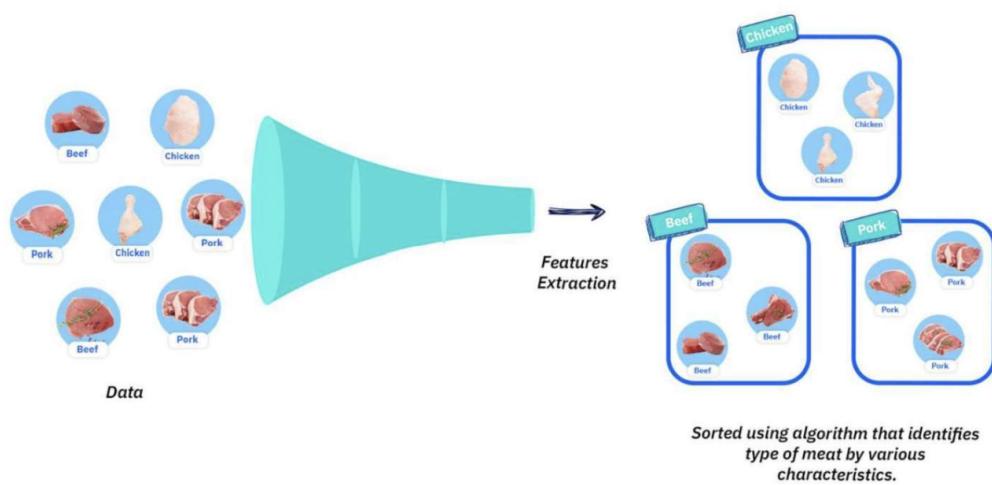
```
if beef_is_on_label:  
    route_items_to_center_basket()  
else:  
    redirect_item_to_main_basket()
```

Artificial intelligence makes this process more efficient.



▼ Machine Learning

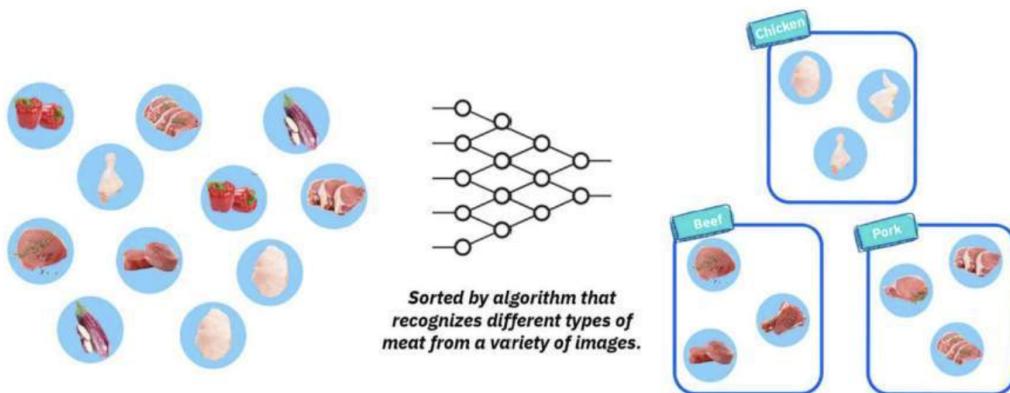
To improve the performance of the machine, you expose it to more data to ensure that the machine is trained on numerous characteristics of each type of meat, such as size, shape, and color. The more data you provide for the algorithm, the better the model gets. By providing more data and adjusting parameters, the machine minimizes errors by repetitive guess work.



▼ Deep Learning

The grocery store has expanded its selection to include more products such as chicken tenders, ground beef, and wild boar. In addition, the products now come in different sizes, shapes, and seasonings. What makes deep learning different?

Deep learning models eliminate the need for feature extractions. For your work in the meat department, you decide to use algorithms based on deep learning to sort meat by removing the need to define what each product looks like. Feature extraction is built into the process without human input. Once you have provided the deep learning model with dozens of meat pictures, it processes the images through different layers of neural networks. The layers can then learn an implicit representation of the raw data on their own.



1. How do AI services work?

2. What do AI services do with their calculations?

so the answer to these questions is two parts first Analysis and prediction

Analysis	prediction
AI services can take in (or “ingest”) enormous amounts of data. They can apply mathematical calculations in order to analyze data, sorting and organizing it in ways that would have been considered impossible only a few years ago.	AI services can use their data analysis to make predictions. They can, in effect, say, “Based on this information, a certain thing will probably happen.”

What prediction can AI make?

let us see this with a real-life example of a love-and-hate relationship with your phone keyboard.

in details is like this.

In simple terms, AI software predicts and suggests corrections as you type by analyzing the context and a vast library of common phrases. While predictions may not always be perfect, they can be quite helpful and save time if they're accurate most of the time.

- Human language

Chatbots use NLP(natural language processing) to understand and respond to questions on topics like shipping, business hours, merchandise, and sizes.

- Vision recognition

AI helps doctors identify serious diseases based on unusual symptoms and early warning signs, and it reads speed limit and stops signs as it guides cars through traffic.

- Fraud detection

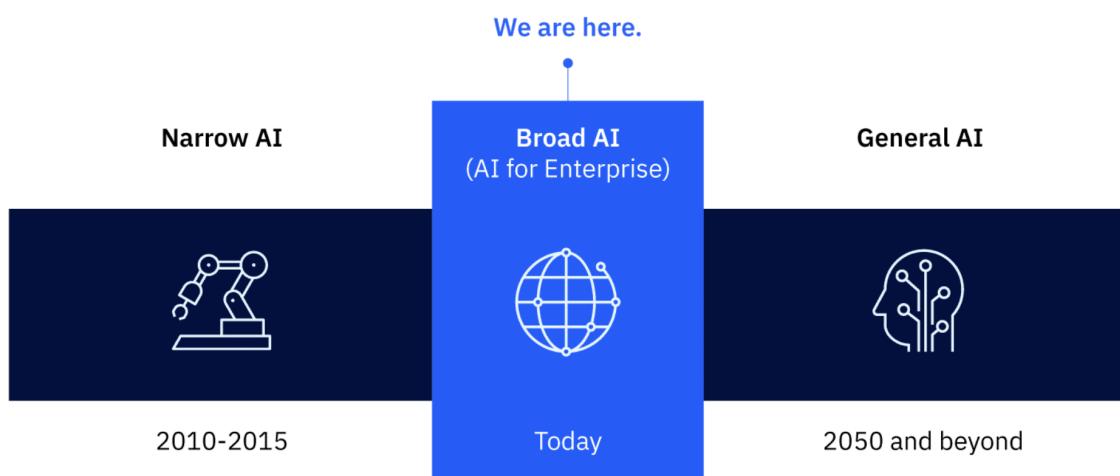
AI analyzes patterns created when thousands of bank customers make credit card purchases and then predicts which charges might be the result of identity theft.

How is AI evolving?

these three are the three levels of AI

Narrow AI	Broad AI	General AI
Narrow AI specializes in specific tasks.	Broad AI is a middle ground between Narrow and General AI	<ul style="list-style-type: none">• General AI can perform any intellectual task like humans.
<ul style="list-style-type: none">• It's quickly adopted in consumer settings.	<ul style="list-style-type: none">• It's versatile, handling a range of related tasks.	<ul style="list-style-type: none">• Current AI lacks abstract thinking, creativity, and emotional understanding.
<ul style="list-style-type: none">• Examples include voice-based book	<ul style="list-style-type: none">• Used for integrating AI into specific	<ul style="list-style-type: none">• AI is far from reaching the level of

purchases and Siri.	business processes.	human-like creativity and emotional response.
<ul style="list-style-type: none"> • It powers robust applications like recommendations and autonomous vehicles. 	<ul style="list-style-type: none"> • Relies on domain-specific knowledge and data. 	
<ul style="list-style-type: none"> • Conversational abilities are limited to predefined scripts. 	<ul style="list-style-type: none"> • Applications include global weather prediction, pandemic tracking, and trend forecasting for businesses. 	



There might be another level, known as **artificial superintelligence (ASI)** that could appear near the end of this century. Then machines might become self-aware! Even then, no levels of AI are expected to replace or dominate you. Instead, scientists hope AI will extend humans' ability to lead richer lives.

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"Our technology, our machines are part of our humanity. We create them to extend ourselves and that is what is unique about human beings." - Ray Kurzweil, Forbes Magazine

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