Artificial Intelligence

AI
ML DL

- Big Data (Huge Volumes of Data)
- Learn and Analyze from Data
- Build Intelligent Systems

AI Branches

| Machine Learning | Deep Learning |

Natural Language Processing

Robotics   Expert Systems
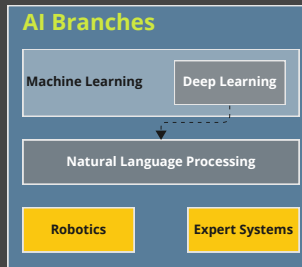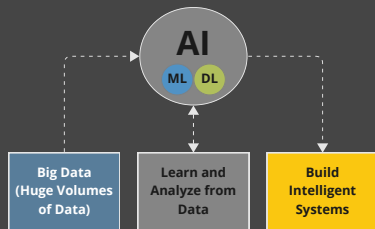
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AI Capability Categories

Artificial Narrow Intelligence (ANI)	Artificial General Intelligence (AGI)	Artificial Super Intelligence (ASI)
Its also considered as Weak or Narrow AI.	Its also considered as Strong or Deep or General AI.	Its also considered as Super Strong AI.
Characteristics: Only AI successfully realized to date. This is mostly reactive with limited or no memory power.	**Characteristics**: Mimic Human Intelligence, learn reasons, adapt to new situations on its own. Full set of cognitive abilities. Mind AI Framework with the abilities to recognize needs, emotions, beliefs and thought processes.	**Characteristics**: Its hypothetical at this point. This is the category where machine becomes self-aware and surpass all human intelligence and abilities. 😱
Examples: Voice cloning, Self-driving cars, movie recommendations, speech recognition/voice assistants, facial recognition, Disease mapping tools, Internet search/recommendation engines, chatbots, Siri/Alexa, IBM Watson, Google translate, etc.	**Examples**: No real example but for movies such as 2001 A space Odyssey, games like Detroit Coming Human. People think closest is ChatGPT, but it is not really an AGI, long way to go. Fujitsu-built K is the probably the most notable supercomputers built that can achieve strong AI (so far it took 40 mins to simulate a single second of neural activity).	**Examples**: No real world apps available. one example could be the movie SkyNet (Terminator) - this is an extreme example of the ethical issues that we've with ASI.
Pros: It can perform specific tasks or even large amounts of data processing more efficiently and accurately than humans. Unlike humans it doesn't require salaries or breaks. 😀	**Pros**: Improve its performance autonomously	**Pros**: Smarter than humans, unprecedented tech advancements. Ideally, they're supposed to be smarter than humans in maths, science, sports, arts, medicine, hobbies, emotions, etc.
Cons: It can't learn beyond specific tasks, can't adapt to new tasks or situations without reprogramming it completely. Cannot mimic human intelligence at all.	**Cons**: Requires significant tech advancements and ethical concerns (once its a reality), need to be addressed and orgs might have Depts. of AI and Ethics with Chief AI Ethics Officers and other roles.	**Cons**: This is the pandora box, that once opened there is no going back (Per Warren Buffet). Autonomous weapons in the hands of evil people could lead to wars, more casualities.
Future: Continue to advance with more capabilities (especially with Deep Learning).	**Future**: Image and Facial recognition technology advancements are most likely the ones we will see in this category.	**Future**: Unknown consequences on humanity, our society, our survival, and our way of life is speculative and scary. At the same time, many experts believe that it's unlikely that ASI can exhibit human emotions and become malevolent.

AI Functionality Categories

Reactive Machine	Limited Memory	Theory of Mind	Self-awareness
Primary form of AI.	Another primary form of AI that trains from past data.	Advanced class of technology and exists only as a concept.	Extremely advanced class of technology and only exists hypothetically.
Characteristics: Does not store memories or use any past experiences to determine future actions and only works based on present data available.	**Characteristics**: Short-lived memory systems, that uses the past data for a specific period of time, but they cannot add it to a library of their experiences and refers back to.	**Characteristics**: Essentially it should understand people's emotions, sentiments and thoughts, hence not quite at all.	**Characteristics**: These systems understand their internal traits, states and conditions and perceive human emotions. They will be smarter than human minds. Ideally, these systems not only understand and evoke emotions in those it interacts with, but also have emotions, needs and beliefs of their own.
Examples: IBM Deep Blue that defeated chess grandmaster Garry Kasparov, completely based on a reactive actions of seeing the chessboard pieces and reacting to them, without actually referring to any prior experience or improve the practices based on prior data.	**Examples**: Self-driving vehicles. It observes how other vehicles are moving around them, at present and as time passes. This data include lane markers, traffic lights and determine vehicle decisions to change lanes, avoid cutting off another driver or hit a nearby vehicle.	**Examples**: Kismet can be considered as one such example, which is a robot head made in 90s by MIT researchers. And it can mimic human emotions and recognize them. Sophia from Hanson Robotics is another example, where it can sustain eye contact, recognize individuals and follow faces.	**Examples**: None.

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