DIGITAL FLUENCY

1. Registration process
2. Artificial intelligence
3. Database management for data science , biga data analytics
4. Internet of things(IOT) and industrial internet of things(IIOT)
5. Cloud computing and its service models
6. Cyber security and types of cyber attacks

ARTIFICIAL INTELLIGENCE

AI IS USED DURING

- Shop online,
- Use our mobiles,
- Drive to work daily,
- Check our mail box or
- Chess-playing computers
- Self-driving vehicles

WHAT IS AI?

- AI is techniques that help machines and computers mimic human behaviour.
- AI is intelligence demonstrated by machines, as opposed to the natural intelligence displayed by humans or animals.
- At the highest level, AI is a device being smart, a machine acting like a human. it is the simulation of human intelligence processes by machines, especially computer systems.
- Artificial intelligence (AI) is progressing rapidly and touching every aspect of our lives.

MACHINE LEARNING

- Next level is the How of AI. It is possible because of Machine Learning (ML).
- ML is the general techniques or variety of techniques that make the device smart.
- It is a branch of artificial intelligence based on the idea that systems can learn from data, identify patterns and make decisions with minimal human intervention.

DEEP LEARNING

- The innermost level is Deep Learning (DL).
- Deep learning is a subset of machine learning, which is essentially a neural network with three or more layers.
- These neural networks attempt to simulate the behavior of the human brain, allowing it to “learn” from large amounts of data.

EXAMPLES OF AI

- Typing using software
- Shopping online
- Chatbots

TYPING USING SOFTWARE

- While typing reports using any word-processor,
- wrong spellings or incorrect grammar is highlighted.
- auto-complete options of previously used words,
- auto-suggest of commonly used words while typing an e-mail, a SMS message or a social media post.
- The underlying software is intelligently monitoring what is being typed.
- The word (complete or incomplete) is matched with an inbuilt database, and either suggestions or corrections are displayed for the user to choose from or ignore

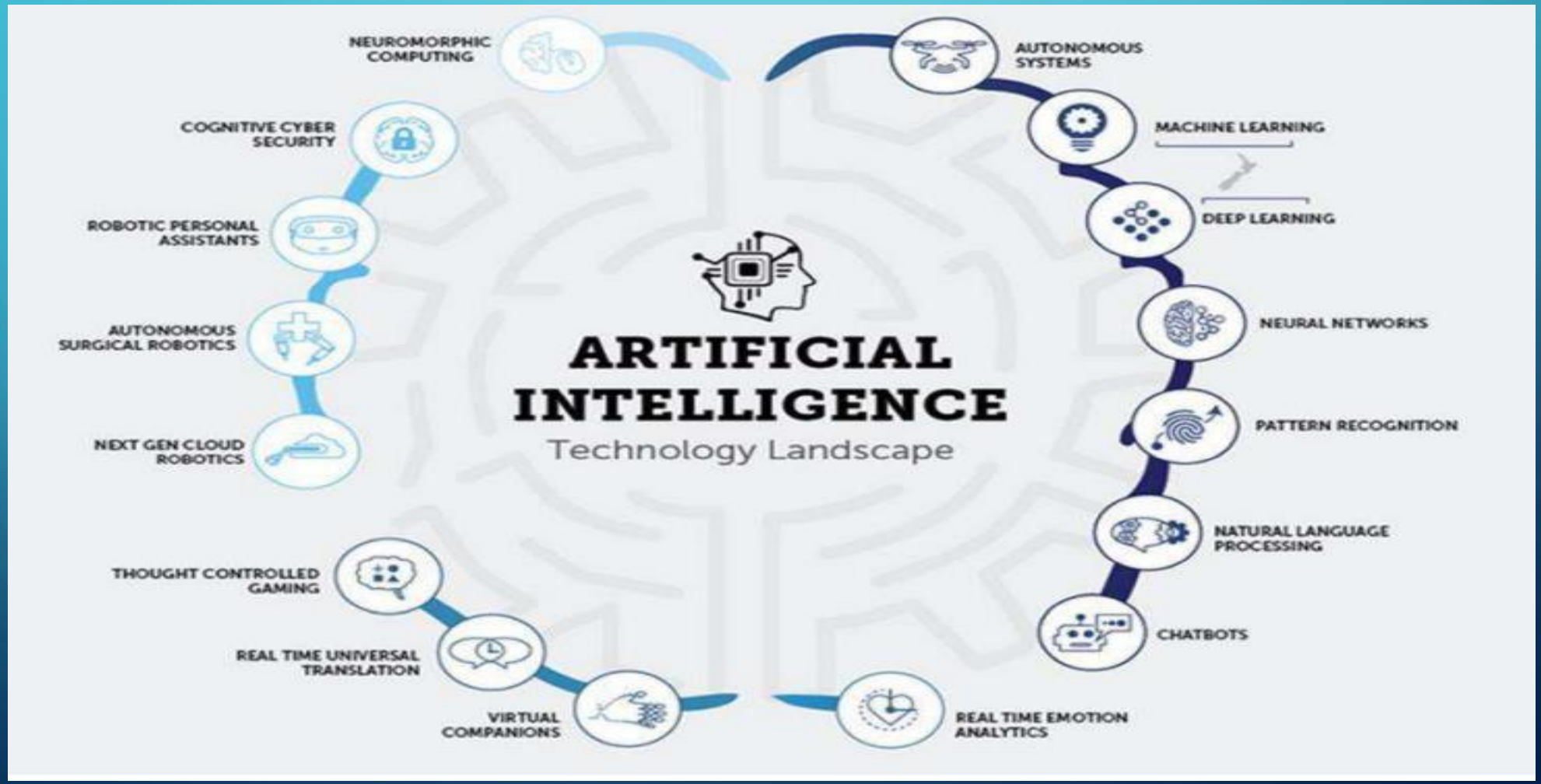
SHOPPING ONLINE

- All of us are now used to shopping online.
- either ordering clothes or gadgets online,
- streaming service (watching movies/shows online).
- Depending on the user profile, the system shows ads, products or suggests programs to watch.
- even though they maybe using the same service/portal.
- The software is constantly monitoring what we are watching or searching online.
- Previous history of browsing is also looked at.
- Shopping preferences are noted.
- Then, appropriate suggestions are displayed.
- All this is happening invisibly or unknown to us.

CHATBOTS

- On many websites to interact with the human users that arrive on the specific sites.
- They try to provide them effective communication
- Providing detailed instructions and guides with spontaneous replies.
- Chatbots are usually used for quick responses to most commonly asked questions on a particular website.
- They save time as well as reduce human labour and expenditure

AI – THE TECHNOLOGY LANDSCAPE



TERMS IN AI

- Autonomous systems
- Machine learning
- Neural networks
- Pattern recognition
- Deep learning
- Natural language processing
- Chatbots
- Real time emotion analytics
- Neuromorphic computing
- Cognitive cyber security
- Robotic personal assistants
- Autonomous surgical robotics
- Next generation cloud robotics
- Thought controlled gaming
- Real time universal translation
- Virtual companions

APPLICATION AREA OF AI

- Robotics
- Real time translation
- Digital assistants
- Gaming and simulation
- Healthcare
- Health care
- Finance
- Manufacturing
- Retail
- Entertainment
- Data security
- Automative
- Business

ROBOTICS

Robots used

- to automate repetitive tasks.
- Assemble cars,
- Pack food items,
- Paint vehicles and
- To even serve as your personal assistants/servants in homes.
- Clean homes,
- Perform day to day tasks like controlling acs, microwave ovens, washing machines.
- To navigate, sense and calculate their reaction accordingly.
- Robots learn to perform their tasks from humans through machine learning which again is a part of computer programming and AI.

REAL TIME TRANSLATION

- Google translate to get text translated from one language to another.
- It is a boon in a country like India, where we have a number of local languages.
- It makes understanding each other a lot easier.
- Machine translation is the process of using artificial intelligence (AI) to automatically translate content from one language (the source) to another (the target) without any human input.
- Digital Assistants (Virtual Companions) like Alexa and Siri are being used in homes to converse and perform simple tasks.

DIGITAL ASSISTANTS (VIRTUAL COMPANIONS)

- Like alexa and siri are being used in homes to converse and perform simple tasks.
- Autonomous vehicles, autonomous robots, autonomous warehouse and factory systems and autonomous drones are some examples of autonomous systems.
- Google maps.
- Commercial pilots use ai autopilot.
- On farms, smart water pump-sets can be switched on/off using sensing or monitoring devices.
- Autonomous systems are defined as systems that are able to accomplish a task, achieve a goal, or interact with its surroundings with minimal to no human involvement.
- It is also essential that these systems be able to predict, plan, and be aware of the world around them.

DIGITAL ASSISTANTS (VIRTUAL COMPANIONS)

- Advantages of autonomous systems are their ability to go into places and situations where humans cannot.
- This includes dangerous places, such inspecting inside nuclear reactors to check for faults, and inaccessible places, such as inside aero-engines.

TRENDS IN AI IN HEALTHCARE

- Healthcare is one industry that is being revolutionized with the latest technologies to meet challenging demands of the time. AI along with several other technologies can help healthcare organizations efficiently operate to deliver better patient care.

AI AND ROBOTICS IN HEALTH CARE SECTOR

- Early detection
- Diognosis
- Decision making
- Treatment
- Life care and keeping well
- Training
- Research

AI IN HEALTH CARE

- AI and machine learning offer better way to spot diseases
- Robots can conduct more varied tasks
- Computer and machine vision can help give appropriate care
- Wearable tech has more to offer than just counting steps
- AI-enabled genomic can determine personalised treatments
- 3D printing helps doctors replicate patient-specific organs
- Digital twins determine possibility for successful outcomes
- 5G can support organisation in transmission of files
- AI Neural Network can improve healthcare biometrics

MACHINE LEARNING OFFER BETTER WAY TO SPOT DISEASES

- Offer new and innovative ways to identify disease,
- Diagnose conditions,
- Crowd-source and develop treatment plans,
- Monitor health epidemics,
- Create efficiencies in medical research and clinical trials, and
- Make operations more efficient to handle increasing demand.
- Artificial intelligence along with machine learning can help solve many clinical problems.

ROBOTS IN HEALTHCARE CAN CONDUCT MORE VARIED TASKS

- The potential for robots in healthcare has reached beyond surgical uses.
- They will be able to help doctors examine and treat patients in rural areas through telepresence
- Transporting medical supplies, disinfecting hospital rooms,
- Helping patients with rehabilitation or with prosthetics,
- And automating labs and packaging medical devices.

COMPUTER AND MACHINE VISION CAN HELP GIVE APPROPRIATE CARE

- There are various ways computers and machine vision are being used in medicine for diagnostics, viewing scans and medical images, surgery, and more.
- It is helping doctors to know exactly how much blood a woman loses while delivering in order to provide immediate care to reduce the mortality of mothers from post-partum haemorrhaging.
- The technology provides accurate intelligence eliminating the guessing game in the healthcare sector

WEARABLE TECH HAS MORE TO OFFER THAN JUST COUNTING STEPS

- Wearable fitness technology is not only limited to tell people how many steps they walk each day.
- It possesses rather more opportunities for healthcare by monitoring heart rhythms, detecting atrial fibrillation and send reports to doctor, monitoring blood pressure and many more.
- Wearable devices will further help consumers proactively get health support if there are irregularities in their trackers.

AI-ENABLED GENOMIC CAN DETERMINE PERSONALISED TREATMENTS

- Artificial intelligence and machine learning help analyse a person's genomic information to determine personalized treatment plans and clinical care.
- In pharmacology, oncology, infectious diseases, and more, genomic medicine is marking a great impact.
- Such information helps the medical community better understand how diseases occur and better way to treat the condition or possibly eradicate it

3D PRINTING HELPS DOCTORS REPLICATE PATIENT-SPECIFIC ORGANS

- 3D printing technology enables prototyping, customization, research, and manufacturing for healthcare.
- Surgeons can replicate patient-specific organs using the advancements of 3D printing.
- It helps them prepare for procedures. Several medical devices and surgical tools can also be 3D printed.
- The technology makes it economic and effective to develop comfortable prosthetic limbs for patients and print tissues and organs for transplant

DIGITAL TWINS DETERMINE POSSIBILITY FOR SUCCESSFUL OUTCOMES

- A digital twin is a real-time virtual representation of a real-world physical system or process that serves as the indistinguishable digital counterpart of it for practical purposes, such a a system simulation, integration, testing, monitoring and maintenance
- It can help doctors in determining the possibilities for a successful outcome of a procedure.
- It also assists them in making better therapy decisions, and manage chronic diseases. Overall, the technology can help improve patient experience through effective, patient-centric care

5G CAN SUPPORT ORGANISATION IN TRANSMISSION OF FILES

- As the healthcare centers are extending their reach in remote or under-served areas through telemedicine, 5G technology will potentially increase the quality and speed of the network and prove to be a necessity for positive outcomes.
- The technology can better support healthcare organizations in transmission of large imaging files so specialists can review and advice on care.
- It also enhances doctor's ability to deliver treatments through AR, VR and mixed reality while enabling remote and reliable monitoring of patients.

AI NEURAL NETWORK CAN IMPROVE HEALTHCARE BIOMETRICS

- Scientists are capable of analyzing the atypical risk factors that were too complicated to quantify, using AI neural networks.
- It helps develop the industry in various ways such as by enabling retinal scans, examining and recording skin colour changes, and many more.
- Its proficiency in finding patterns will enable the unlocking of new diagnostic methods and discover unknown risk factors.

AI IN BUSINESS HOW IS AI BEING USED BY BUSINESSES

- Businesses are using AI in various ways to help in decision making, across all levels of management. The following are the key areas –
- For reasoning
- To present knowledge
- In planning
- To facilitate communication
- To enhance perception

FOR REASONING

- reasoning is the ability to solve problems through logical deduction.
- For eg., AI is used to financial asset management, legal assessment, financial application processing, autonomous weapons systems and games.

TO PRESENT KNOWLEDGE

- AI can help in presenting knowledge about the world.
- For eg., financial market trading, purchase prediction, fraud prevention, drug creation, medical diagnosis and media recommendation.

IN PLANNING

- AI helps in helping to set and achieve goals.
- For eg., inventory management, demand forecasting, predictive maintenance, physical and digital network optimization, navigation, scheduling and logistics.

TO FACILITATE COMMUNICATION

- AI uses translation to make business processes easier to conduct, regardless of the geographical location.
- AI uses its ability to understand spoken and written languages to do this.
- Some applications of this aspect of AI is being used to facilitate real-time translation of spoken and written languages, real-time transcription, intelligent assistants and voice control

TO ENHANCE PERCEPTION

- images, sounds and other sensory inputs.
- This is useful in fields like medical diagnosis, surveillance and autonomous vehicles.

AI TRENDS IN VARIOUS SECTORS

- AI is helping businesses to monitor data, analyze trends, strategize policies and help in decision making. So, apart from automating tasks, AI is now being used to think and plan.
- AI has the potential of creating more jobs than the traditional jobs it replaces. AI will take away our mental constraints just like it has taken away our physical constraints.
- Influences global politics
- AI automates every business
- AI will create more jobs
- AI enhances transparency in every system
- AI will be used as assistants such as Alexa, Siri, Google assistants

DIFFERENCE AMONG AI, ML AND DL

- AI involves machines that can perform tasks that are characteristic of human intelligence. That is, machines doing what humans can do.,
- it includes things like planning, understanding language, recognizing objects and sounds, learning, and problem-solving.
- AI has two categories, general and narrow.
- General AI would have all of the characteristics of human intelligence, including the capacities mentioned above.
- Narrow AI exhibits some facet(s) of human intelligence, and can do that facet extremely well, but is lacking in other areas.

MACHINE LEARNING

- Machine Learning is simply a way of achieving AI.
- Machine learning is a way of "training" an algorithm so that it can learn how.
- "Training" involves feeding huge amounts of data to the algorithm and allowing the algorithm to adjust itself and improve them.
- Then, the algorithm tries to build a model that can accurately tag a picture as containing a cat or not as well as a human. Once the accuracy level is high enough, the machine has now "learned" what a cat looks like.

MACHINE LEARNING

- Machine learning is a method of data analysis that automates analytical model building.
- It is a branch of artificial intelligence based on the idea that systems can learn from data, identify patterns and make decisions with minimal human intervention.
- Machine learning is a type of artificial intelligence that helps computers “learn” without someone having to program them.
- The computers are programmed in a way that focuses on data that they receive. This new data can then help the machine “learn” what your preferences are and adjust itself accordingly.
- For instance, when a video website suggests a movie you might like, it’s likely learned your preferences based on your past choices.

APPLICATIONS OF MACHINE LEARNING

- Financial services
- Government agencies
- Healthcare
- Retail
- Oil and gas
- Transportation and logistics

FINANCIAL SERVICES

- Banks and other businesses in the financial industry use machine learning technology for two key purposes: to identify important insights in data, and prevent fraud. The insights can identify investment opportunities, or help investors know when to trade. Data mining can also identify clients with high-risk profiles, or use cyber-surveillance to pinpoint warning signs of fraud

GOVERNMENT AGENCIES

- Government agencies such as public safety and utilities have a particular need for machine learning since they have multiple sources of data that can be mined for insights. Analyzing sensor data, for example, identifies ways to increase efficiency and save money. Machine learning can also help detect fraud and minimize identity theft.

HEALTHCARE

- Machine learning is a fast-growing trend in the health care industry, thanks to the advent of wearable devices and sensors that can use data to assess a patient's health in real time. The technology can also help medical experts analyze data to identify trends or red flags that may lead to improved diagnoses and treatment.

RETAIL

- Websites recommending items you might like based on previous purchases are using machine learning to analyze your buying history. Retailers rely on machine learning to capture data, analyze it and use it to personalize a shopping experience, implement a marketing campaign, price optimization, merchandise supply planning, and for customer insights.

OIL AND GAS

- Finding new energy sources. Analyzing minerals in the ground. Predicting refinery sensor failure. Streamlining oil distribution to make it more efficient and cost-effective. The number of machine learning use cases for this industry is vast – and still expanding.

TRANSPORTATION AND LOGISTICS

- Analyzing data to identify patterns and trends is key to the transportation industry, which relies on making routes more efficient and predicting potential problems to increase profitability. The data analysis and modeling aspects of machine learning are important tools to delivery companies, public transportation and other transportation organizations.

MACHINE LEARNING METHODS

- Supervised learning
- Unsupervised learning
- Semi-supervised learning
- Reinforcement learning

SUPERVISED LEARNING

- Supervised learning is commonly used in applications where historical data predicts likely future events.
- For example, it can anticipate when credit card transactions are likely to be fraudulent or which insurance customer is likely to file a claim.
- The most common fields of use for supervised learning are price prediction and trend forecasting in sales, retail commerce, and stock trading. In both cases, an algorithm uses incoming data to assess the possibility and calculate possible outcomes.

UNSUPERVISED LEARNING

- Unsupervised learning works well on transactional data.
- For example, it can identify segments of customers with similar attributes who can then be treated similarly in marketing campaigns. Or it can find the main attributes that separate customer segments from each other.
- Digital marketing and ad tech are the fields where unsupervised learning is used to its maximum effect. In addition to that, this algorithm is often applied to explore customer information and adjust the service accordingly.

SEMI-SUPERVISED LEARNING

- Semi-supervised learning is useful when the cost is too high to allow for a fully supervised process.
- Examples of this include identifying a person's face on a web cam.
- Legal and Healthcare industries, among others, manage web content classification, image, and speech analysis with the help of semi-supervised learning.

REINFORCEMENT LEARNING

- This often used for robotics, gaming and navigation.
- With reinforcement learning, the system discovers through trial and error which actions yield the greatest rewards. Modern NPCs (non-playing characters) and other video games use this type of machine learning model a lot.
- Reinforcement Learning provides flexibility to the AI reactions to the player's action thus providing viable challenges. For example, the collision detection feature uses this type of ML algorithm for the moving vehicles and people in the Grand Theft Auto series.

DEEP LEARNING

- Deep Learning is one of the approaches to Machine Learning.
- Deep learning was inspired by the structure and function of the brain, namely the interconnecting of many neurons.
- Artificial Neural Networks (ANNs) are algorithms that mimic the biological structure of the brain. In ANNs, there are “neurons” which have discrete layers and connections to other “neurons”.
- Each layer picks out a specific feature to learn, such as curves/edges in image recognition.
- It’s this layering that gives deep learning its name, depth is created by using multiple layers as opposed to a single layer.

DEEP LEARNING

- Deep learning is a machine learning technique. It teaches a computer to filter inputs through layers to learn how to predict and classify information. Observations can be in the form of images, text, or sound.
- The inspiration for deep learning is the way that the human brain filters information. Its purpose is to mimic how the human brain works to create some real magic.
- **Deep learning attempts to mimic the activity in layers of neurons in the neocortex.**

DEEP LEARNING

- **Deep Learning** is a computer software that mimics the network of neurons in a brain. It is a subset of machine learning based on artificial neural networks with representation learning. It is called deep learning because it makes use of deep neural networks. This learning can be supervised, semi-supervised or unsupervised.
- Deep learning algorithms are constructed with connected layers.
- The first layer is called the Input Layer
- The last layer is called the Output Layer
- All layers in between are called Hidden Layers. The word deep means the network join neurons in more than two layers.

DEEP LEARNING

- Each Hidden layer is composed of neurons. The neurons are connected to each other. The neuron will process and then propagate the input signal it receives the layer above it. The strength of the signal given the neuron in the next layer depends on the weight, bias and activation function.
- The network consumes large amounts of input data and operates them through multiple layers; the network can learn increasingly complex features of the data at each layer.

FREQUENTLY ASKED QUESTIONS

WHAT IS ARTIFICIAL INTELLIGENCE?

- Artificial Intelligence is when a software or a particular model developed can perform complex tasks on its own without requiring any assistance from humans. Artificial Intelligence is a field of study consisting of various sub-fields, including machine learning, deep learning, neural networks, computer vision, natural language processing, and so much more.

HOW POWERFUL IS AI?

- The power of AI depends on the capability of the researcher working on the computation of the program. As of now, AI is quite powerful to solve a set of tasks that is assigned to it efficiently and effectively. However, it hasn't reached its peak yet, and we are a few years away from that point.

WILL AI STEAL OUR JOBS?

• The demand for skilled AI specialists is growing faster like never before. Requirements and open positions for experts in the sub-fields of AI like machine learning, deep learning, computer vision, statistics, and natural language processing are growing each day. So, AI will pave the way for more jobs for humans to control them. Humans are intellectual beings. Hence, AI willsimplify the complexity of human work but won't actually take away our jobs.

CAN AI TAKE OVER THE WORLD?

• Artificial Intelligence has come a long way and developed into a unique feature of the modern world. Despite the advancements in AI, most of the tasks are still done under some kind of human supervision in the working or the development stages. • Artificial Intelligence is also limited to be the particular task that it is programmed to complete. So, as of today, AI taking over the world is unlikely.

WHAT ARE THE ADVANTAGES OF AI?

• Apart from the massive job opportunities created by AI, it also has other advantages, such as the completion of looping or repetitive tasks that humans need to perform without making errors. • Artificial Intelligence, similar to a computer program, cannot tire and hence has the capacity to work all day long on a particular task until the desired results are accomplished. • They have the ability to perform faster computations compared to human speed on a wide range of problems with precise results. They also have tons of real-life applications to make our daily lives simpler.

WHAT ARE THE DISADVANTAGES OF AI?

• The construction of Artificial Intelligence models from scratch can sometimes be timeconsuming and resourcefully exhaustive. Building such models may not be possible on a regular PC. • The deployment of Artificial Intelligence models can also be quite expensive in some cases. Also, the maintenance costs in case of malfunctioning of the AI models in peculiar cases can be annoying to deal with and solve. DIGITAL FLUENCY E-MANUAL 41 • AI cannot be used to accomplish more superior and intellectual tasks, as of today.

WHAT ARE THE APPLICATIONS OF AI?

- Artificial Intelligence in the natural world has a wide variety of applications. These include your journey from the start of the day till the end of the day. When you usually start your day with your smartphone, you make use of the AI capabilities of smart face lock or other fingerprint AI measures to unlock your phone. • Then you decide to google something, you are greeted with AI features of autocomplete and autocorrect, which utilizes technologies of sequence to sequence modeling. Apart from smartphones, Artificial Intelligence has tons of other applications, including email spam detection, virtual assistants, chatbots, optical character recognition, and so much more. • Artificial Intelligence also finds its applications in many other fields, such as topics ranging from robotics, medical sciences, logistics and transportation, finances, and tons more utility services in industries.

DO YOU NEED TO BE A GENIUS TO START LEARNING AI?

• No, not necessarily. Artificial Intelligence is a field containing a lot of sub-fields. It is worth investing your precious time to gain further knowledge in the subject of AI if you are particularly interested in the various intriguing concepts that are offered by learning AI. • While learning AI from scratch might sometimes be hard at the beginning, it becomes more interesting and cool as you proceed to invest more time learning numerous concepts related to AI. You will gain exposure to mathematics, programming, machine learning, and so much more that will expand your vast knowledge. • Even if you find that the field of Artificial Intelligence is not suitable for your particular interests, it is still totally fine as long as you learn something about the numeroustopics of AI. • The knowledge you gain from learning AI can be partially or completely utilized for various software applications and jobs as well.

HOW WILL ARTIFICIAL INTELLIGENCE AFFECT HEALTHCARE?

- AI can lead to better care outcomes and improve the productivity and efficiency of care delivery. It can also improve the day-to-day life of healthcare practitioners, letting them spend more time looking after patients and in so doing, raise staff morale and improve retention

WHICH IS THE BEST APPLICATION OF AI IN THE HEALTHCARE SECTOR?

- Some of the beneficial applications of AI for healthcare purposes would be administrative workflows, image analysis,robotic surgery, virtual assistants, and clinical decision support

WILL AI IN HEALTHCARE MAKE DOCTORS REDUNDANT?

- AI can enhance clinical productivity due to its ability to handle a large capacity of tasks that are well suited for automation. AI can reduce the burden of clerical work of physician's thus improving the quality of care and allow them to spend more time with patients and the healthcare team

WHAT DO YOU UNDERSTAND BY THE TERM ROBOTICS?

• Robotics is a combined branch of engineering and science which deals with the study of development, operation, and control of intelligent robots. Robotics is a part of Artificial intelligence. Robotics technology is used for the development of machines which can perform a complex human task in a very efficient way

WHAT ARE VARIOUS TYPES OF SENSORS USED IN THE ROBOTICS?

- Various types of sensors used in robots include light sensors, sound sensors, temperature sensors, proximity sensors, acceleration and navigation sensors.

WHAT CAN A DIGITAL ASSISTANT DO?

- A digital assistant pulls data from multiple sources and puts it into context. Advanced natural language processing gives it the ability to process what you are saying or typing. Advanced natural language understanding (NLU) gives it the ability to parse what you say or type and then generate accurate answers

IS A CHATBOT A DIGITAL ASSISTANT?

- Data-driven and predictive (Conversational AI) chatbots are also called a Virtual Assistant or Digital Assistant.
- Apple's Siri and Amazon's Alexa are examples of consumer-oriented, datadriven, predictive AI chatbots

WHAT IS AUTONOMOUS SOFTWARE?

- An autonomous system is one that can achieve a given set of goals in a changing environment – gathering information about the environment and working for an extended period of time without human control or intervention.

WHAT TECHNOLOGIES ARE NEEDED FOR AUTONOMOUS VEHICLES?

- There are several critical technologies behind safe and efficient autonomous-vehicle operation—AI, safety and security, cameras, network infrastructure, and the sensor technologies radar and lidar, or laser-light radar.

WHY ARE AUTONOMOUS THINGS IMPORTANT?

- Autonomous things are fundamentally important because they represent the first real disconnection of machines from explicit human guidance. Humans are used to programming things, but are not used to them acting in autonomous ways. Self-driving vehicles are still making their way onto the roads

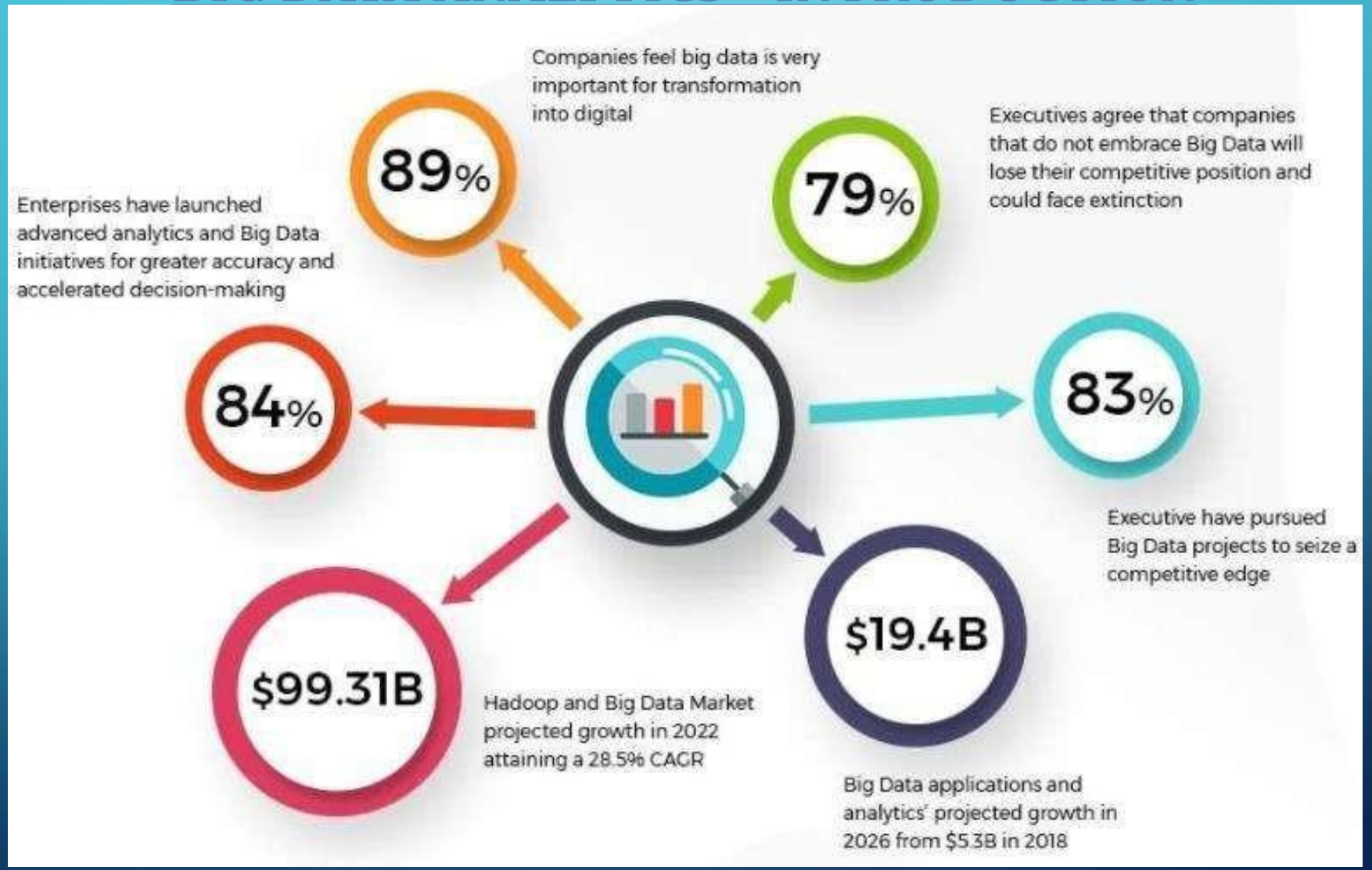
DATABASE MANAGEMENT FOR DATA SCIENCE, BIG DATA ANALYTICS

- There are 70 million photos uploaded to Instagram every day. People interact with each of those posts by commenting and using hashtags. What all of this activity does is create an enormous amount of data. Once analyzed, by humans as well as increasingly through artificial intelligence algorithms, it can provide incredible business intel and insights. Through the support of tags and trending information, the users can find photos and posts on particular topics or activities, events.

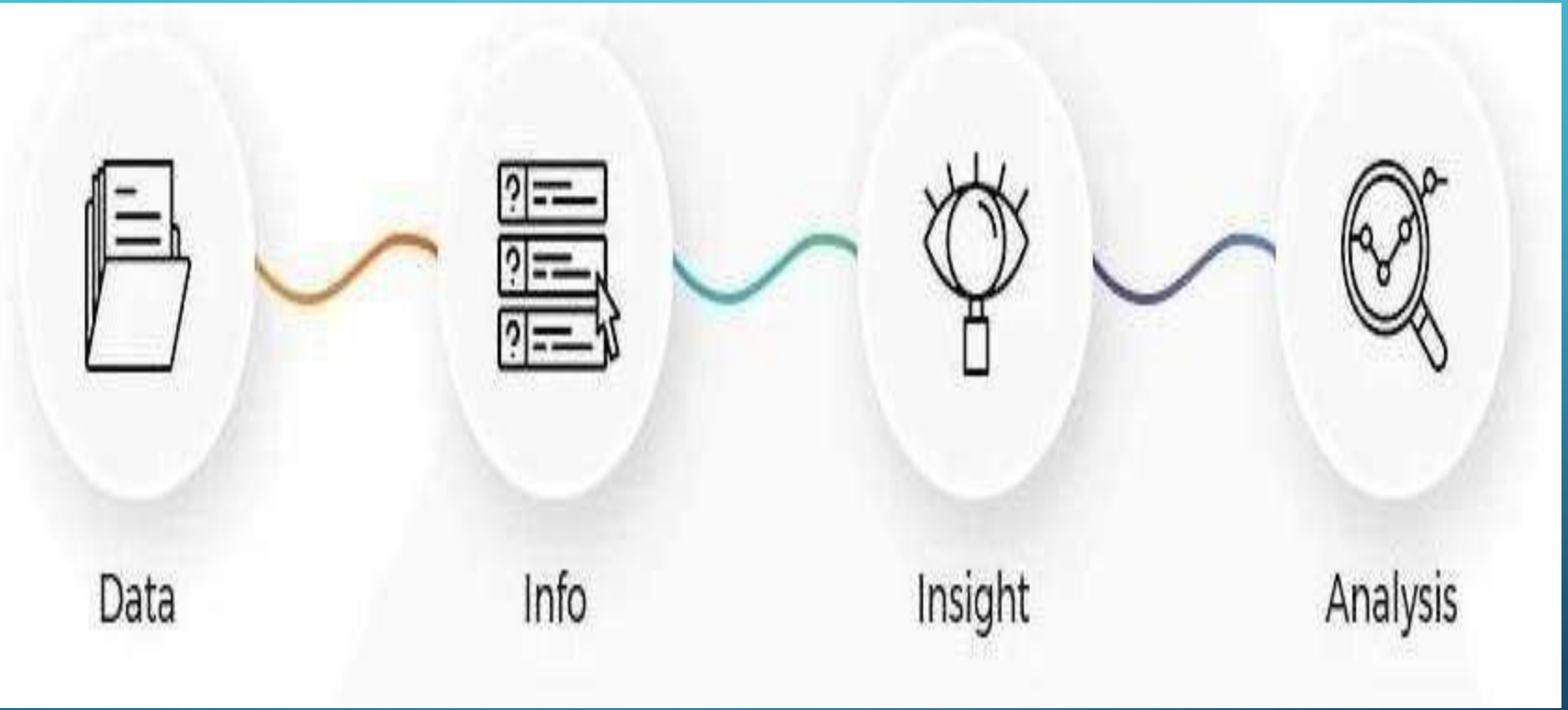
NOW HOW DOES THIS FUNCTION WORK?

- Instagram recognizes accounts that are more or less similar to one another by adopting a machine learning technique termed “**word embedding**”. This technique deciphers the order in which words appear in the text in order to measure how connected they are. Instagram uses the same technique to decipher and comprehend how connected any two accounts are to each other.

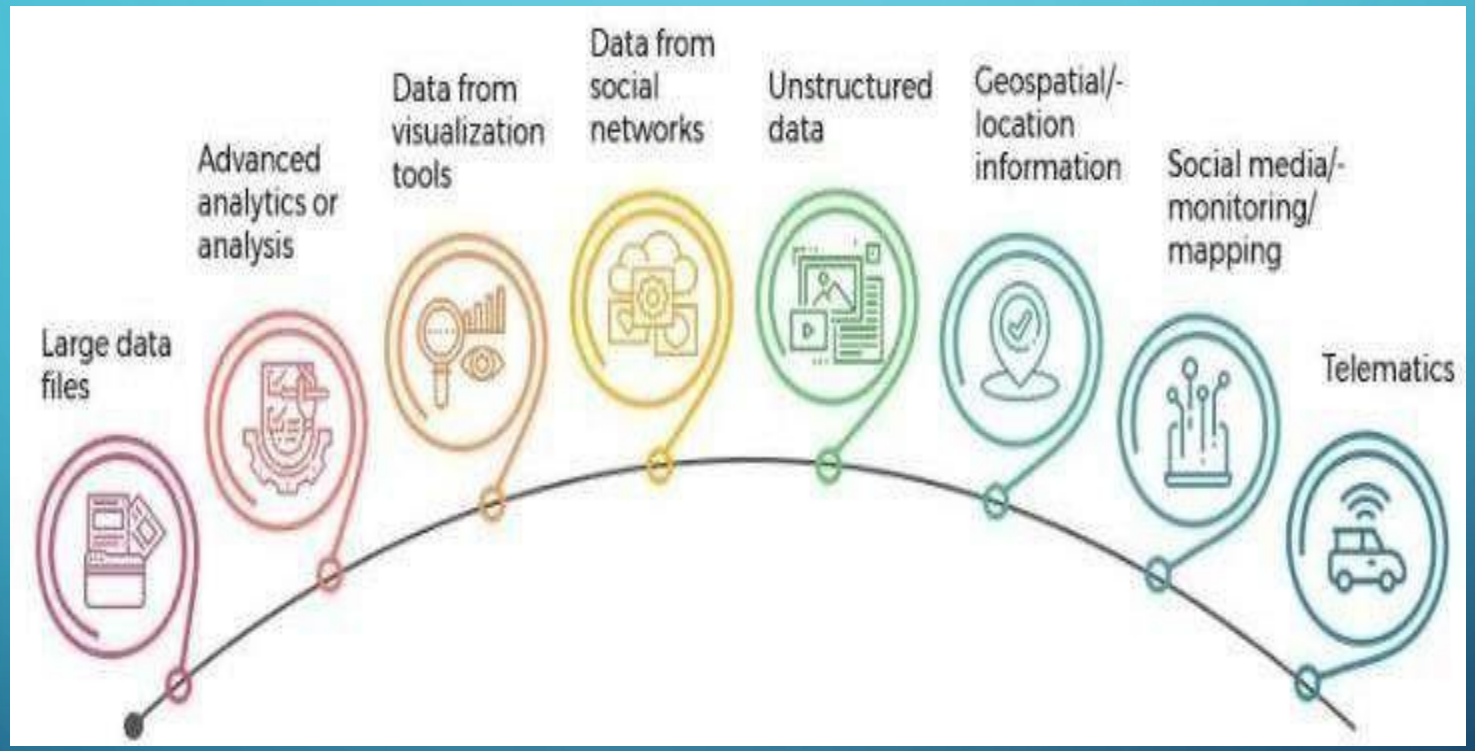
BIG DATA ANALYTICS - INTRODUCTION



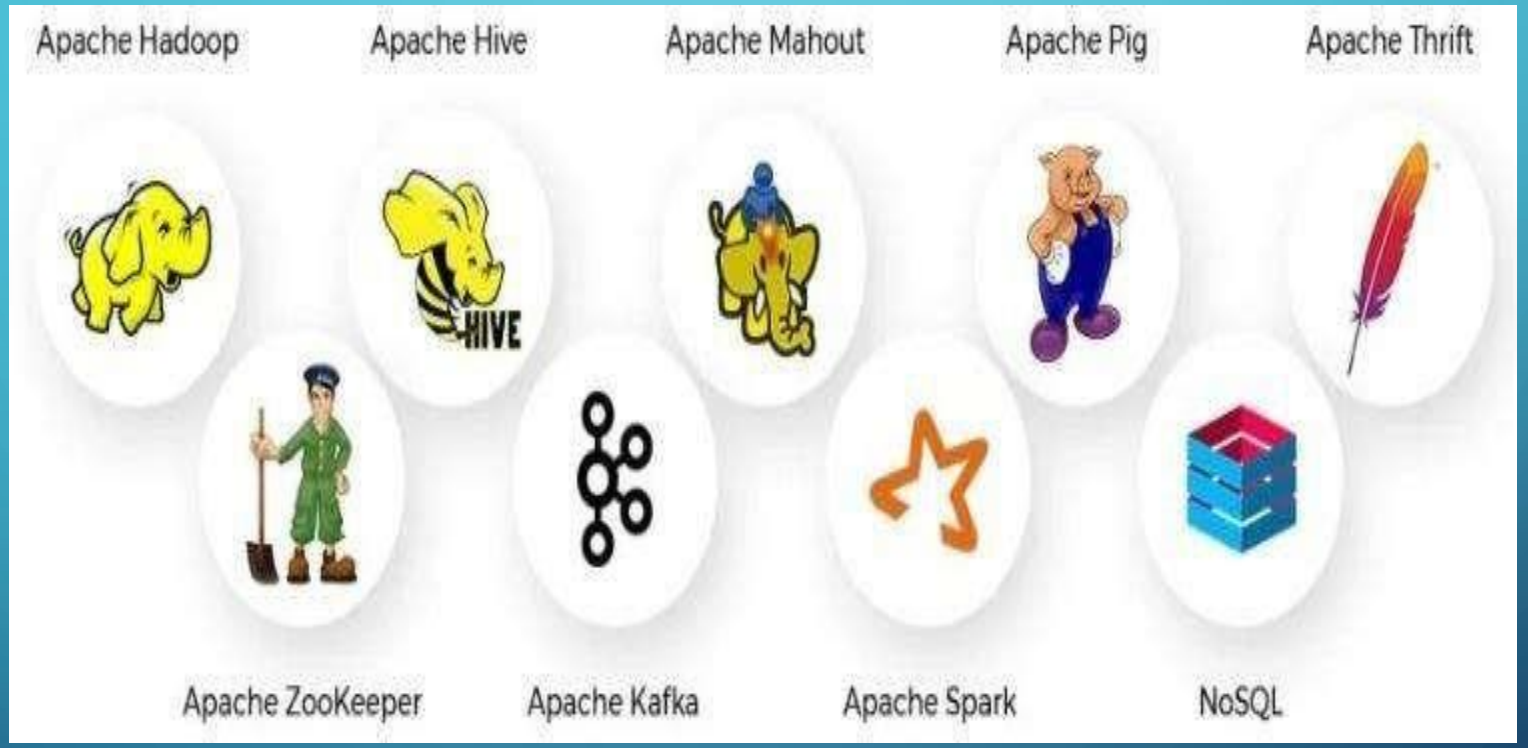
DATA ANALYTICS PROCESS



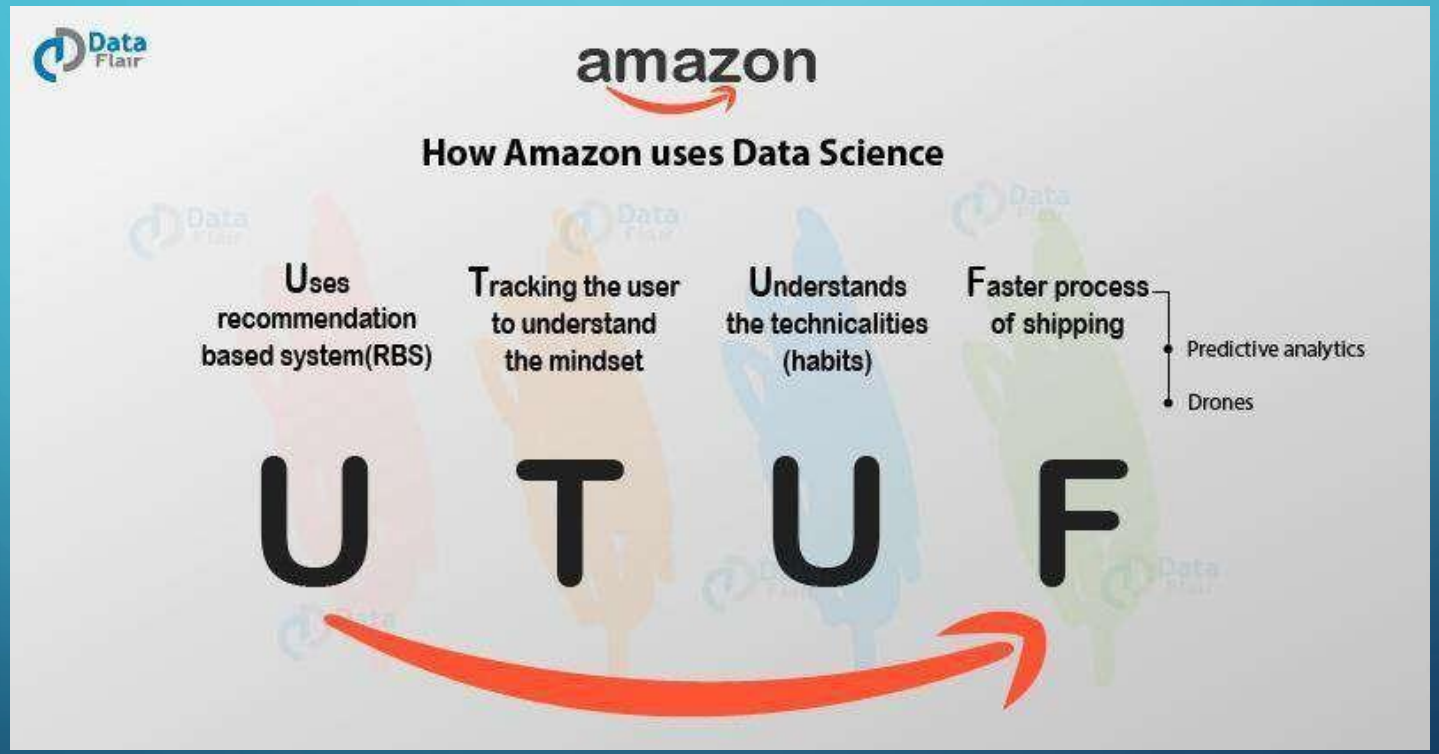
SOURCES OF BIG DATA



BIG DATA TOOLS AND TECHNOLOGIES



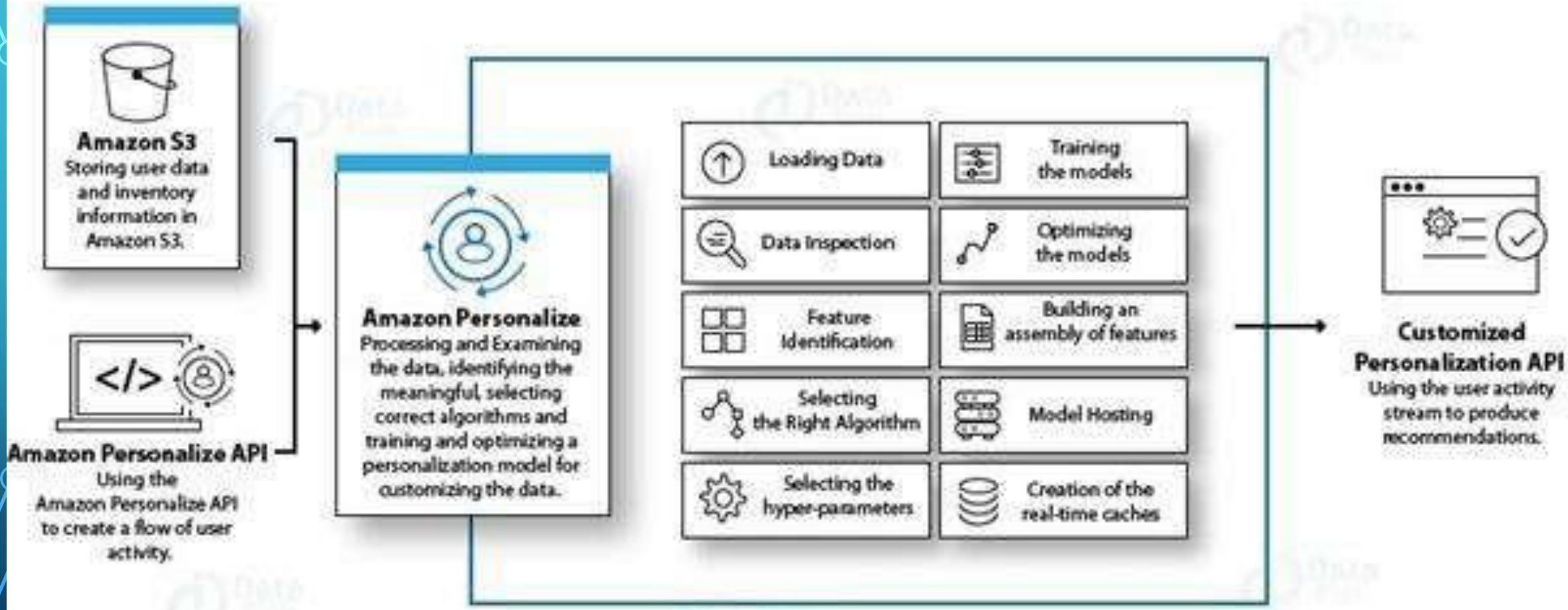
HOW AMAZON USES DATA SCIENCE



USES RECOMMENDATION-BASED SYSTEM (RBS)

- Through this technology, it gathers data from their customers (Can also be called Big Data). The more data they have the better it is for them because once they understand what the user wants, they then streamline the process and try to encourage the customers to purchase the products. RBS seeks and predicts the “rating” or “preference” a user would give to an item.

Amazon's Recommendation Engine



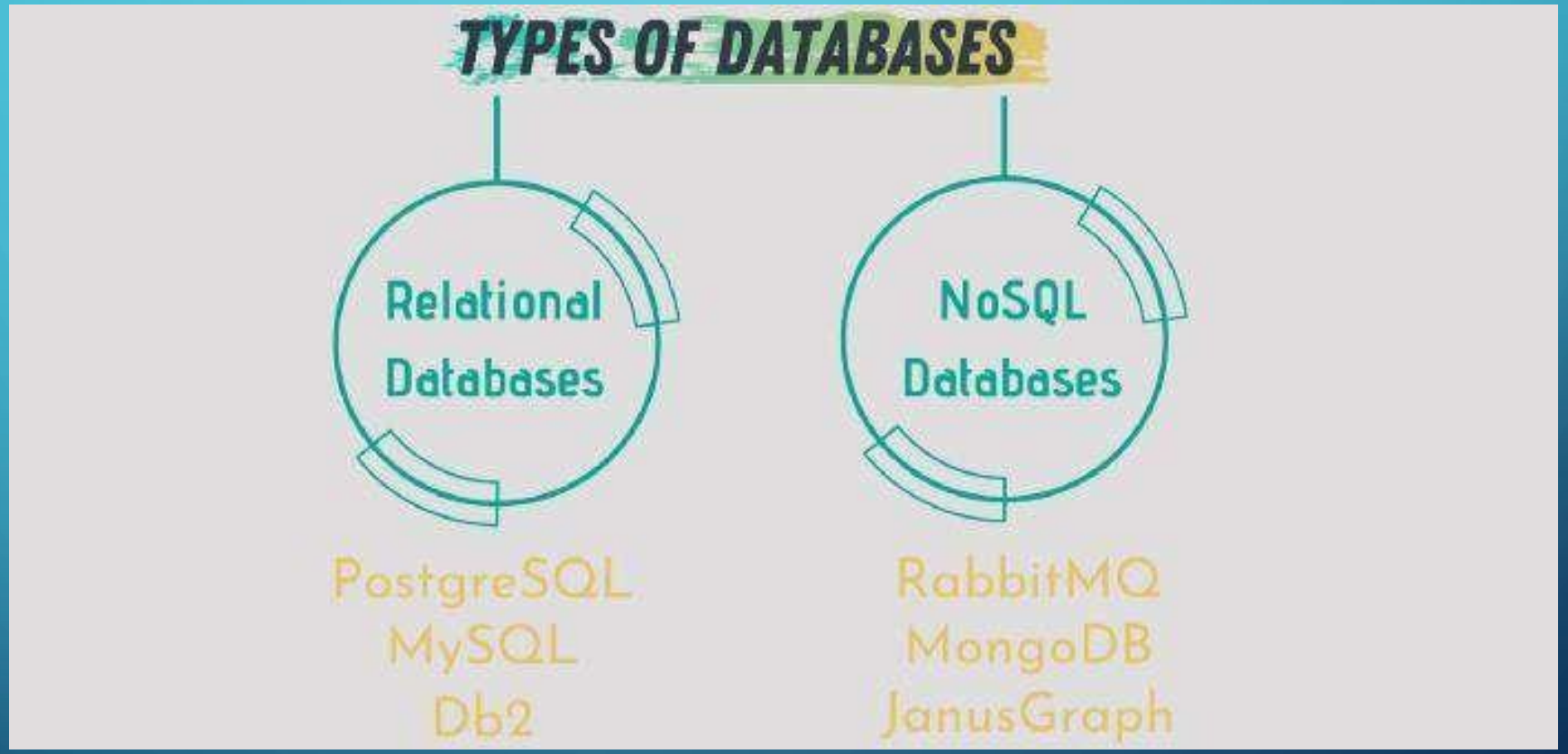
INTRODUCTION TO DATA

- Data are individual facts, statistics, or items of information, often numeric, that are collected through observation.
- In a more technical sense, data are a set of values of qualitative or quantitative variables about one or more persons or objects, while a datum is a single value of a single variable.

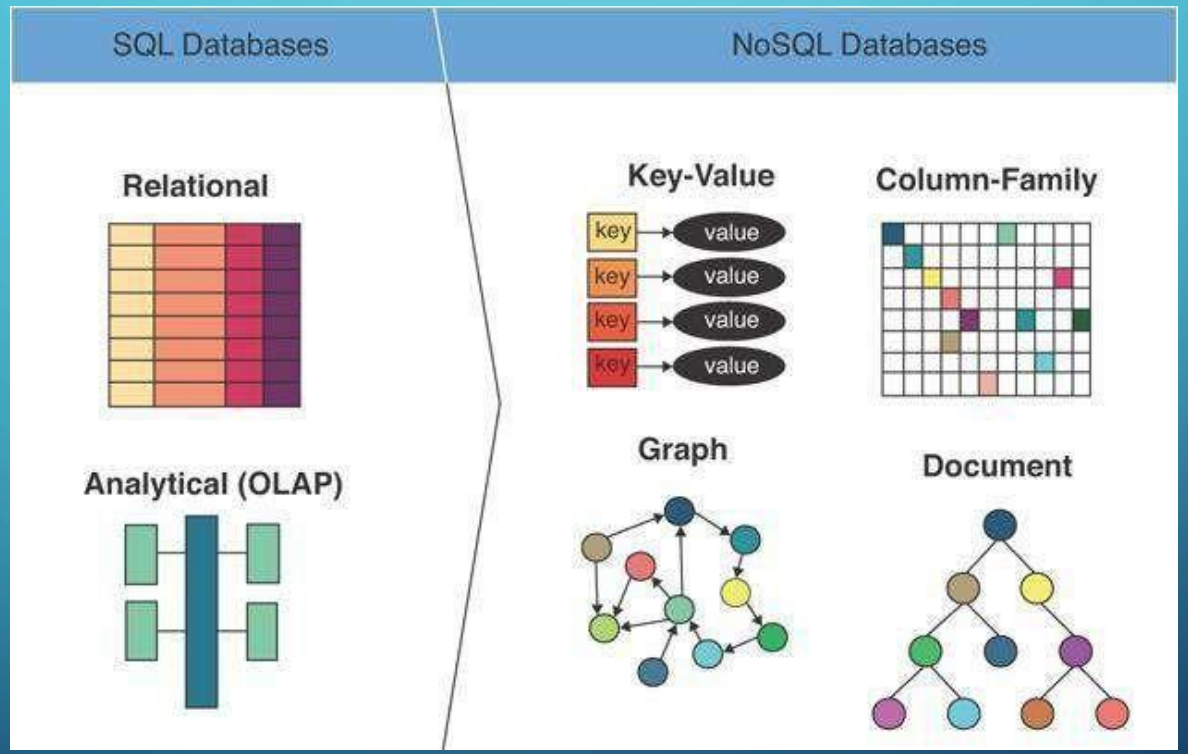
DEFINITION OF DATABASE

- A database is defined as a structured set of data held in a computer's memory or on the cloud that is accessible in various ways.
- Database Management Systems (DBMS) refer to the technology solution used to optimize and manage the storage and retrieval of data from databases.

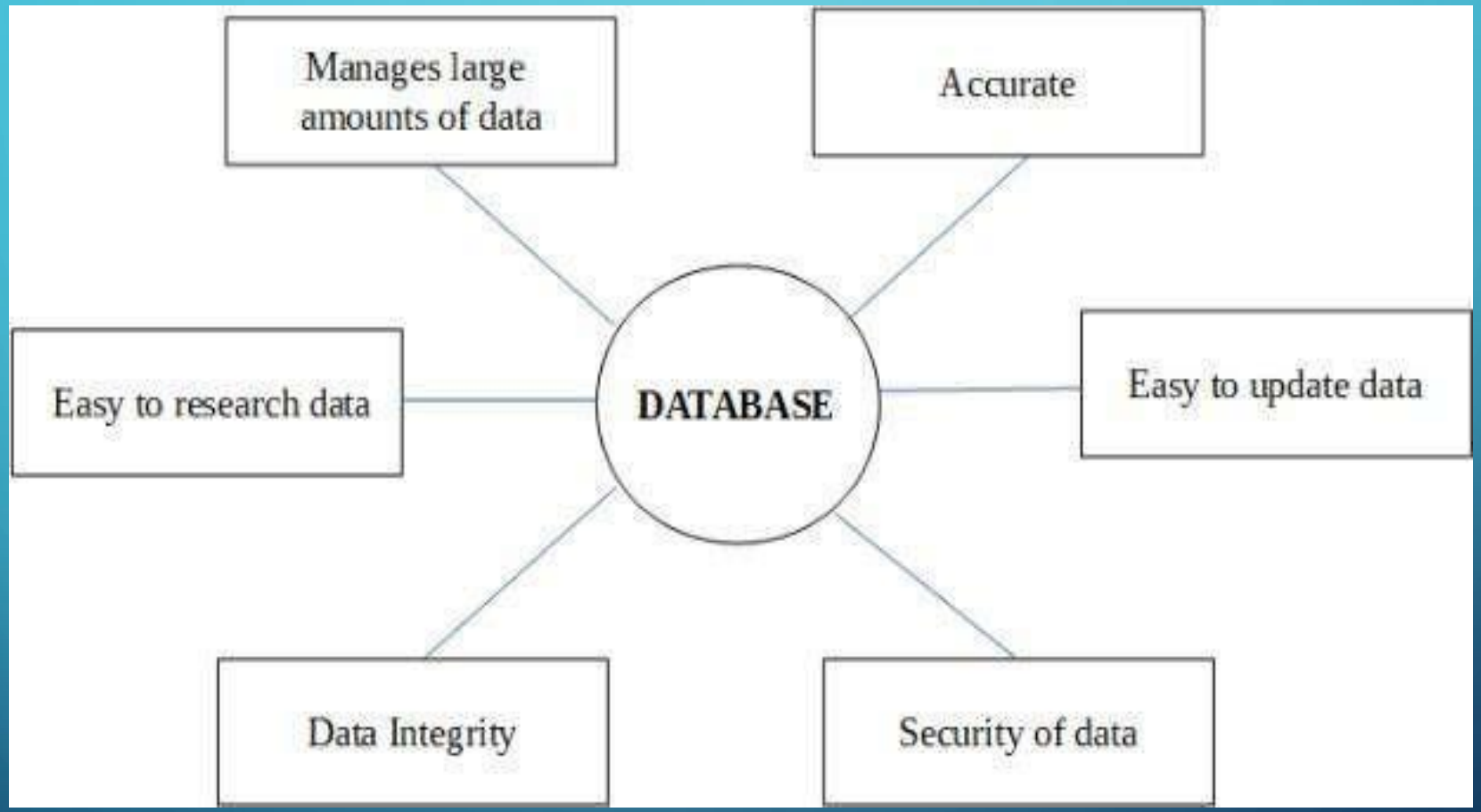
TYPES OF DATABASE



TYPES OF DATABASE-CONTD.



ADVANTAGES OF DATABASE



FREQUENTLY ASKED QUESTIONS

WHAT IS DATA SCIENCE?

Data science is an interdisciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from noisy, structured and unstructured data, and apply knowledge and actionable insights from data across a broad range of application domains.

WHAT IS THE NEED FOR DATA SCIENCE?

The reason why we need data science is the ability to process and interpret data. This enables companies to make informed decisions around growth, optimization, and performance. Demand for skilled data scientists is on the rise now and in the next decade.

WHAT IS DATA SCIENCE USEFUL FOR?

Data science is a process that empowers better business decision-making through interpreting, modeling, and deployment. This helps in visualizing data that is understandable for business stakeholders to build future roadmaps and trajectories. Implementing Data Science for businesses is now a mandate for any business looking to grow.

How facebook uses data analytics to understand your posts?

Facial recognition - Facebook uses a DL application called DeepFace to teach it to recognize people in photos. It says that its most advanced image recognition tool is more successful than humans in recognizing whether two different images are of the same person or not – with DeepFace scoring a 97% success rate compared to humans with 96%.

Textual analysis - A large proportion of the data shared on Facebook is still text. Facebook uses a tool it developed itself called Deep Text to extract meaning from words we post by learning to analyze them contextually. Neural networks analyze the relationship between words to understand how their meaning changes depending on other words around them. It learns for itself based on how words are used. It can easily switch between working across different human languages and apply what it has learned from one to another.