

* 3 domains of AI:

1. NLP
2. CV

3.

DATA SCIENCE

new gold

* Data is a basic ingredient of AI.

Eg: Rock, paper, scissors game

applications of data science:-

1. Fraud and Risk Detection

- Financial related companies such as banks, have a lot of paper work to do. ∴ companies used data science to analyse data and ~~keep~~ derive meaningful insights from it.
- with help of data science, frauds are recognised and data is protected.

2. Internet Search or Autocomplete

- data collect hata hai and ... yk. it traces patterns and all.

3. Website recommendation

- same as 2.

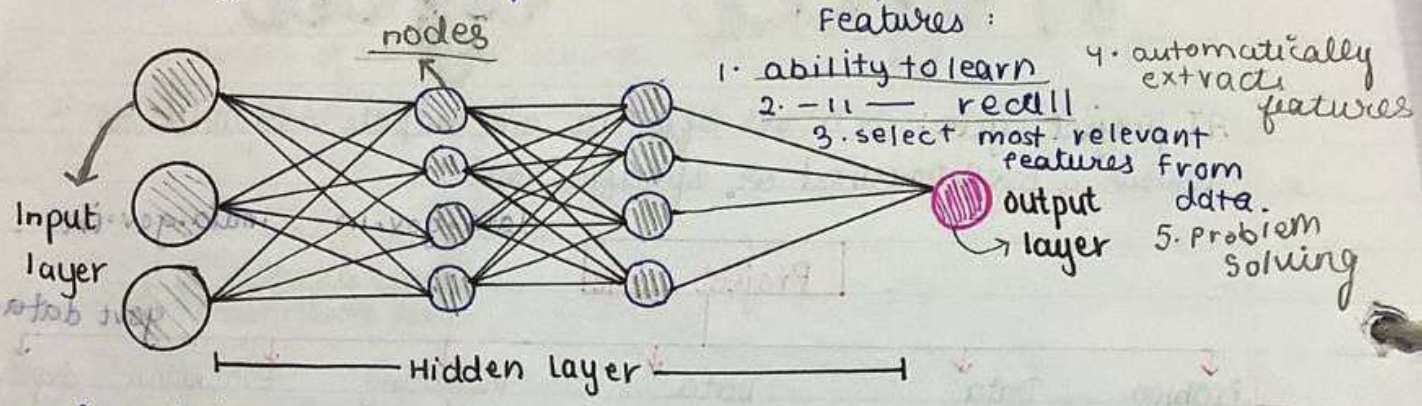
4. Medical Diagnosis and Medical imaging

→ drug discovery, genetics, genomics.

5. Digital marketing and Target Advertising

API → application Programming interface.
 messenger

NEURAL NETWORK: can be defined as a computing system made up of simple and highly interconnected elements which process information by their dynamic state response to external inputs



* A confusion matrix is used to record the results of comparison between prediction and reality.

The output given by AI is called Prediction.

The conf ⁿ matrix		Reality	
		yes	no
Prediction	yes	TP	FP
	no	FN	TN

@kaavya_kya_kehna_chahati_hai

evaluation is the process of understanding the reliability of any AI model, based on output by feeding test dataset into the model and comparing with actual answer.

Over fitting: when all prediction are correct because the machine is trained that way is known as overfitting

Accuracy:

$$\frac{(TP+TN)}{TP+TN+FP+FN} \times 100$$

Precision:

$$\frac{TP}{TP+FP} \times 100$$

Recall:

$$\frac{TP}{TP+FN}$$

F1 score:

$$\frac{2 \times \text{Precision} \times \text{Recall}}{\text{Precision} + \text{Recall}}$$

RGB →
0 → Black.
255 → white

OCR → optical character recognition
highlighting text

COMPUTER VISION

enables machine to see through images or visual data

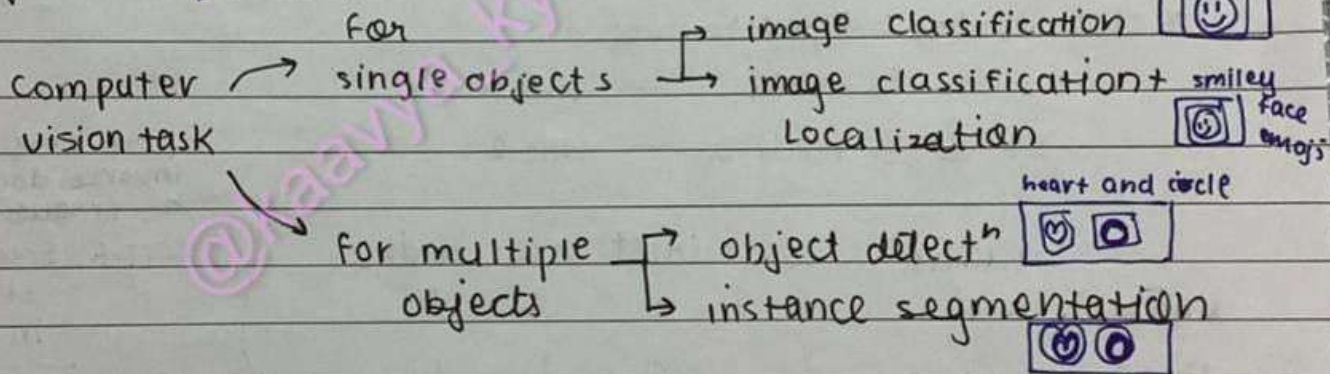
applications:-

1. self driving cars
 2. Augmented Reality (snapchat)
 3. Facial Recognition
 4. medicinal imaging
 5. google search by image
 6. Face filters
- ARIANNA: path recognition for indoor assisted navigation with augmented perceptⁿ → assists visually impaired

1 mega pixel → 1 million pixels ppi.

Resolution → amount of pixel present in image.

pixel → picture of element



* how images are stored in computer?

↓

Grayscale and RGB format.

* opencv → extracting features from image

NLP component of AI

syntax → grammar structure
 symantics → meaning

NLP: is a branch of AI that helps develop human-like ability in machines to understand and interpret human language.

human → grammar
 computer → 0 & 1

S → specific
 M → measurable
 A → achievable
 R → Relevant
 T → Time bound
 goals.

* a normal sentence - corpus

stop words ← a normal sentence - word

Text Normalisation
 ↓
 normalize text

* upper case to lower case.
 * stemming: connection, connected
 high frequency low value
connect

① sentence segmentation
 ② Tokenization.

word stemming lementizatⁿ
 Happily happi happy

* doc vector: frequency of each word in a doc.

sudha is idiot — line 1
 so is medha — line 2.

	sudha	is	idiot	so	medha
line 1:	1	1	1	0	0
line 2:	0	1	0	1	1

Inverse document frequency

term frequency - inverse doc frequency
 TF-IDF = $\frac{\text{frequency of words in doc}}{\text{Total no of words}}$

* no. of corpus = no. of vector docs

→ sequence of sentences or tokens

* Bag of words is used in NLP to extract features from text for document classification tasks.

check the importance of words.

Document frequency

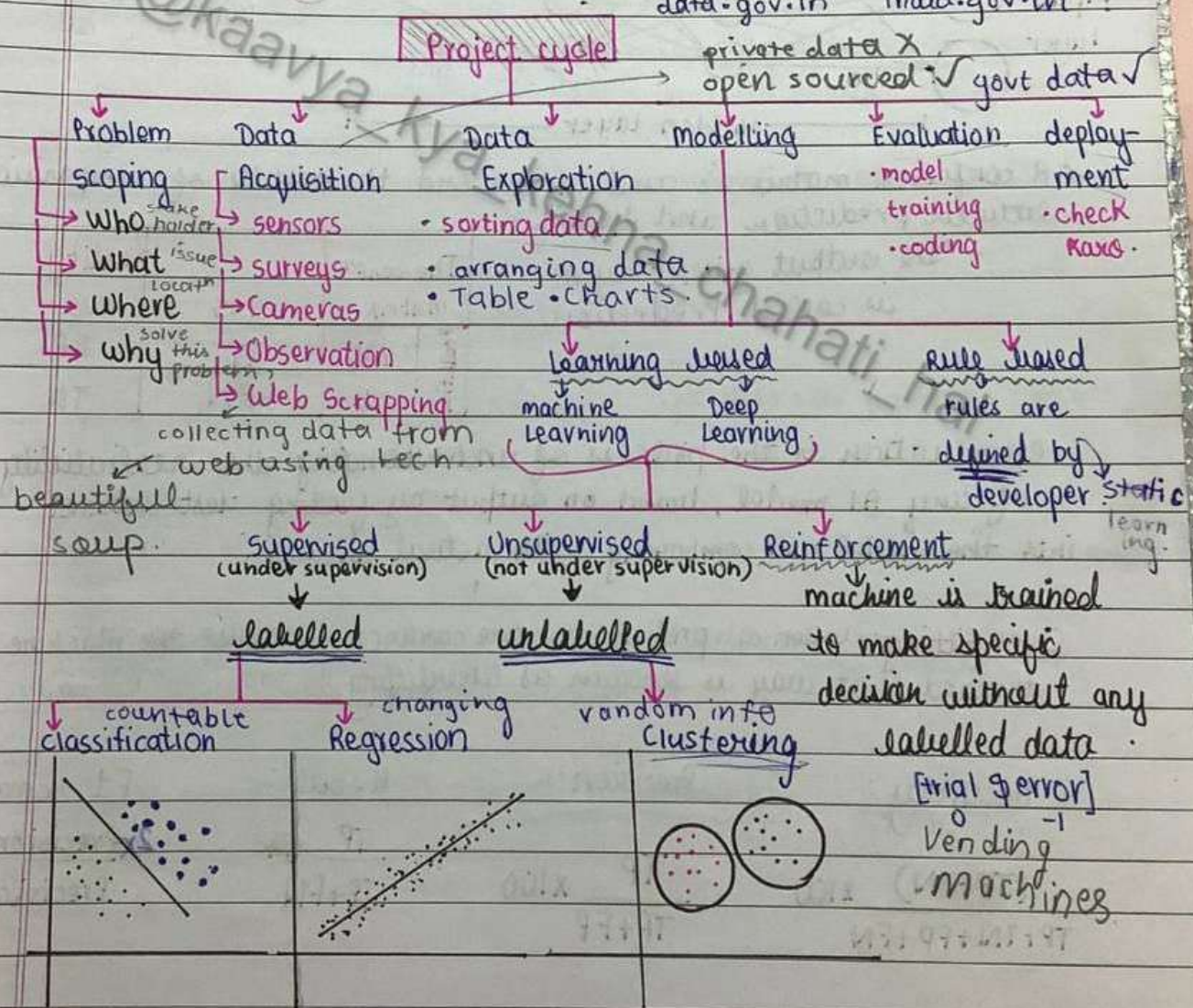
Iot
internet of thing.
• automatic

Intelligence
• can take decision by their own

(DL) Data Acquisition
Big data
volume variety velocity
amount of data type of data produced speed of data produced

Project Cycle

AI project cycle: as a set of inputs and outputs required to achieve a predetermined or specific goal.



• Data preprocessing: manipulation, filtration of data before analyzing.

AI

What is Intelligence ?

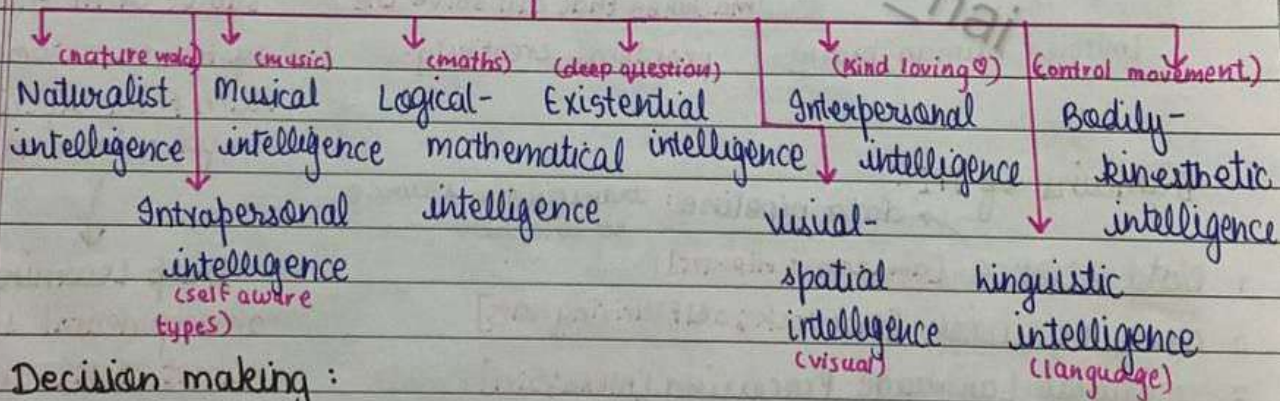
→ The ability to understand or deal with new situations is called intelligence.

Features of Intelligence : (cognitive Tasks)

1. Problem solving
2. Decision making
3. Reasoning and Planning
4. Learning and Adaptability
5. Linguistic Intelligence.

[INTRO]

Types of Intelligence.



Decision making :

is the capability of a person to identify the situation, gather information and select the best solution to problem out of all available options.

MORE ARTIFICIAL INTELLIGENCE

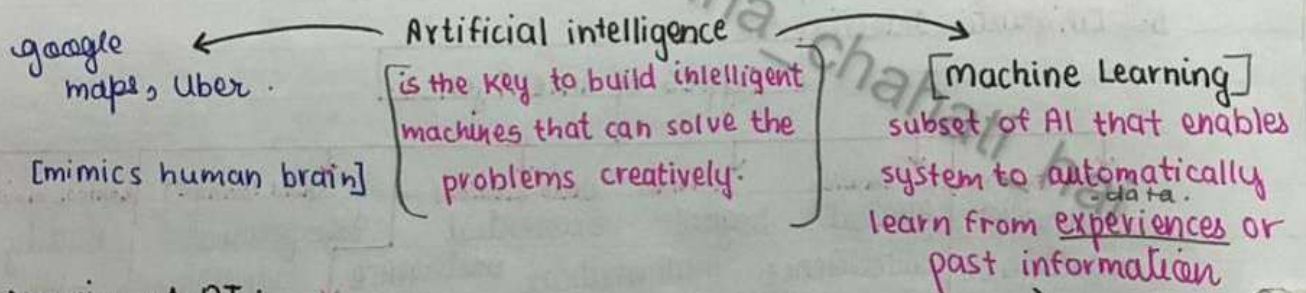
What is Artificial intelligence?

→ AI is a branch of computer science which studies how the human brain thinks, learns, decides and work when it attempts to solve problem.

Applications of AI in various sectors :

1. Healthcare
2. Social Networking
3. Education
4. Manufacturing Industry
5. Banking

Data + Algorithm =
AI machine



Domains of AI :

1. Data science [amazon ; flipkart] Price comparison website
2. Computer vision [face lock ; self driving cars]
3. Natural Language Processing [Alexa ; Siri] Email filter

[Deep Learning] or deep neural learning is subset of ML. This system is trained by vast amount of data.

disadvantages :

1. Produces biased outputs →
2. Privacy concerns
3. Threat to future jobs
4. Income inequality
5. security

blue : boy
pink : girls
vacation : beaches

uses multi-layered structure called neural network.

ICT

information
and
communication
Technology skills.

Basics of computer operations

software

the part we cannot touch and see

Starting a computer

- The BIOS (basic input & output system) does a self run test.
- Log in & Log out

Shutting down a computer

→ click shut down in computer first

Using a mouse

- Roll over or hover
- Point & click
- Drag & Drop
- Double click

Basics: keep comp cool; do not over charge;

Handle device carefully; be careful with food and drinks;
do not run too many programs together; plug in carefully; remove spam;
scanning and clean virus

Threat to computer:

1. Theft
2. Identity
3. Software Piracy
4. Virus
5. Worms
6. Trojan Horse
7. Online Predator
8. Internet Scams

9. Phishing: a scam where attackers deceive people into revealing sensitive information or installing malware such as virus, worms etc.

6. Trojan Horse: dikhta h as if app h but virus hota h.

- * notepad: .txt
- * sound files: .mp3
- * image: .jpg

Hardware
the physical part we can touch and see.

Using a Keyboard

1. Control keys: control (CTRL), SHIFT, spacebar, ALT, caps lock, Tab
2. Enter key: The label on this key can either ENTER or RETURN.
3. Punctuation keys: ?, /, !, ', " ", ;, ,
4. Navigation keys: home, up, down, end etc.
5. Command keys: insert, delete, backspace, start
6. Window key: opens the menu.

Entrepreneurship is the type of self employment where one is running a business to satisfy the needs of people & looking for ways to make the business better to make profit.

Entrepreneurship Skills

Qualities of a successful entrepreneurs :

1. They are confident
2. Self belief
3. Not afraid of taking risks
4. They are patient
5. They take responsibility for their action.
6. Hardworking
7. Creative
8. Do not give up when they face difficulties

What do entrepreneurs do when they run a business?

- Fulfil customers needs.
- use local materials
- Help society
- Create Jobs
- Sharing of wealth
- Lower price of products

* MYTHS:

- every business idea needs to be unique or special
- every business needs a lot of money.
- only a person with a big business is an entrepreneur.
- entrepreneurs are born and not made.

Functions of Entrepreneur:

1. make decisions
2. Managing the business
3. Divide income
4. Take risks
5. Create new method, idea or products.

GREEN SKILLS

What are sustainable Development goals?

→ goals that satisfy the needs of present without compromising the capacity of future generation

Launched → 2015 → new york.

o. Importance of sustainable development.

17 SDG GOALS :

1. No poverty
2. Zero Hunger
3. Good Health & Well-being
4. Quality education
5. Gender equality
6. Clean water & sanitation
7. Affordable and clean energy
8. Decent work and economic growth
9. Reduce inequality
10. Sustainable cities and communities
11. Responsible consumption and production
12. Climate action
13. Life below water
14. Life on land
15. Peace, Justice & Strong institutions
16. Industry, Innovation and Infrastructure
17. Partnership for the goals

Refuse
Reduce
Reuse
Recycle
up cycle

} 4 R's and 1 U
of sustainable development

Self Management

• Basics of self-management :

- self awareness
- Responsibility
- Time management
- Adaptability

• 3 steps of stress management :

- be aware that you are stressed.
- Identify why are you stressed
- apply stress management methods.

- ↳ time management.
- ↳ Physical exercise and fresh air.
- ↳ Healthy diet.
- ↳ Positivity
- ↳ organising academic life, no delay
- ↳ sleep
- ↳ Holiday with family & friends.

- SWOT analysis^{**} → strength; weakness; opportunity; threats.

* staying self motivated is very important!

- Goals: a set of dreams with a deadline to get them.

How to set goals?

1. specific
2. measurable
3. Achievable
4. Realistic
5. Time bound

→ Stress management

What is stress?

- stress can be defined as our emotional, mental, physical & social interaction to any perceived demands or threat.

- Stressors → reason for stress.

ABC of stress management :

A: adversity of stressful event

B: Beliefs or the way you respond

C: consequences or action of event.

* emotional intelligence:

- understand your emotions
- Rationalize [think]
- Practise [yoga]

Communication Skills

- The word communication comes from Latin word *communis* means 'to share'

First humanoid robot with citizenship: Sophia

methods of communication

Verbal

- Interpersonal [one on one] communication
- written communication [email/letter]
- small group communication [Press conferences; Board/Team meeting]
- Public communication [Public speech]

major 3 parts:
i] transmitting
ii] listening
iii] Feedback

Non verbal

- gestures [Hi! / Bye]
- Expressions [smile] [frown]
- Body language [standing straight]
- Facial expression [sad, Happy]
- Paralanguage [use a suitable tone; maintain moderate speed while talking]
- Eye contact [don't look here & there]
- Space [maintain proper distance]
- Touch [avoid in formal; firm shake hand]

advantages of verbal communication

1. can exchange ideas by saying what you want get a quick response
2. understanding emotions, tone etc.
3. Helps understand intentions and express better.

disadvantages of verbal communication

1. misunderstand voice and speech
2. ~~language~~ language barrier