INDIAN SCHOOL AL WADI AL KABIR

ARTIFICIAL INTELLIGENCE(417) CLASS IX

What is Artificial Intelligence?

When a machine…

- Mimics human intelligence
- Can solve real-world problems
- Improves on its own from past experiences
- Can predict and make decisions on its own

…it can be termed as Artificially Intelligent!

How to make machine intelligent?

Data + Algorithm = AI Machine!

Game 1: Rock - Paper – Scissors (based on Data)   (https://rockpaperscissors-ai.vercel.app/)

Write three things you learnt from the game?

_____

_____

_____

List the different sources from where you can collect data?

Game 2: Semantris (based on Natural Language Processing - NLP) (https://research.google.com/semantris/)

Mention three things you understood about the game?

_____

_____

_____

What is Natural Language Processing?

Game 3: Quick Draw (based on Computer Vision - CV) (https://quickdraw.withgoogle.com/)

Did you face any difficulty while playing this game? How did you overcome this?

What is Computer Vision?

AI Domains

CV — Computer Vision, is an AI domain works with videos and images enabling machines to interpret and understand visual information.

NLP — Natural Language Processing (NLP) is an AI domain focused on textual data enabling machines to comprehend, generate, and manipulate human language.

Statistical Data — Statistical Data refers to statistical techniques to analyse, interpret and draw insights from numerical/tabular data.

Some AI Applications

Face Lock in Smartphones

Smartphones nowadays come with the feature of face locks in which the smartphone's owner can set up his/her face as an unlocking mechanism for it. The front camera detects and captures the face and saves its features during initiation. Next time onwards, whenever the features match, the phone is unlocked.

Smart assistants

Smart assistants like Apple's Siri and Amazon's Alexa recognize patterns in speech, then infer meaning and provide a useful response.

Fraud and Risk Detection

Finance companies decided to bring in data scientists to rescue them from losses. Over the years, banking companies learned to divide and conquer data via customer profiling, past expenditures, and other essential variables to analyse the probabilities of risk and default. Moreover, it also helped them to push their banking products based on customer's purchasing power.

Medical Imaging: For the last decades, computer supported medical imaging application that has been a trustworthy help for physicians. It doesn't only create and analyse images, but also becomes an assistant and helps doctors with their interpretation. The application is used to read and convert 2D scan images into interactive 3D models that enable medical professionals to gain a detailed understanding of a patient's health condition.

AI project cycle

- AI project cycle is the cyclical process followed to complete an AI project.

- AI project cycle takes us through different steps involved in a project.

- AI project cycle helps us:

- to create better AI projects easily

- to create AI projects faster

- to understand the process
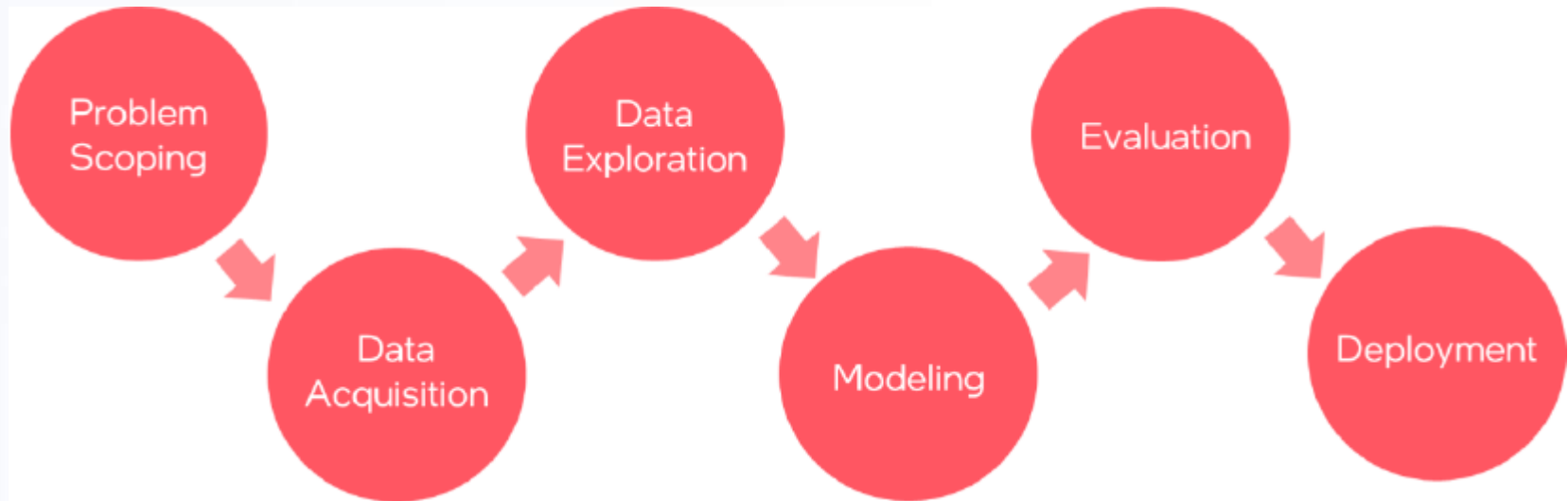
Why do we need an AI Project Cycle?

Efficiency

To create **better** AI solutions **easily**

We can build an AI solution faster and with lesser effort

Modularity

To **break** the process into many **smaller** parts

If our AI solution does not work, we don't have to check and change everything

Problem: Pest infestation damages crops

The cotton industry in India consists of 6 million local farmers. Cotton crops frequently get infected with the Pink Bollworm. It is difficult to see these insects with the naked eye. Small farmers find it very difficult to get rid of these insects. They do not have advanced tools and techniques to protect their plants from Pink Bollworm.

While finalising the aim of this system, you scope the problem which you wish to solve with the help of your project. This is **Problem Scoping**.

As you start collecting the images, names of villages, farmers and other details you actually acquire data. This data now becomes the base of your pest management system. Note that the data needs to be accurate and reliable as it ensures the efficiency of your system. This is known as **Data Acquisition.**

At this stage, you try to interpret some useful information out of the data you have acquired. For this, you explore the data and try to put it uniformly for a better understanding. This is known as **Data Exploration**.

To implement your idea, you now look at different AI-enabled algorithms which work on Computer Vision (since you are working on visual data). You go through several models and select the ones which match your requirements. After choosing the model, you implement it. This is known as the **Modelling** stage.

As you move towards deploying your model in the real-world, you test it in as many ways as possible. The stage of testing the models is known as **Evaluation**. In this stage, we evaluate each and every model tried and choose the model which gives the most efficient and reliable results.

The last stage where you *deploy your solution based on the model* you've selected is known as **Deployment**.

CottonAce app
- CottonAce is a mobile application that can help farmers protect their crops from pests.
- CottonAce uses AI to warn the farmers about a possible pest infestation.
- It aids farmers in –
- Determining the correct amount of pesticides
- Knowing the right time to spray pesticides
- Seeking professional help as needed.

How does it work?
- A farmer sets up a trap to capture pests.
- Take a picture of the captured pests.
- Upload the picture on the app.
- The app detects the insect, level of infestation, and the required measures to cure it.

Problem Scoping

- Problem identification and have a vision to solve it.
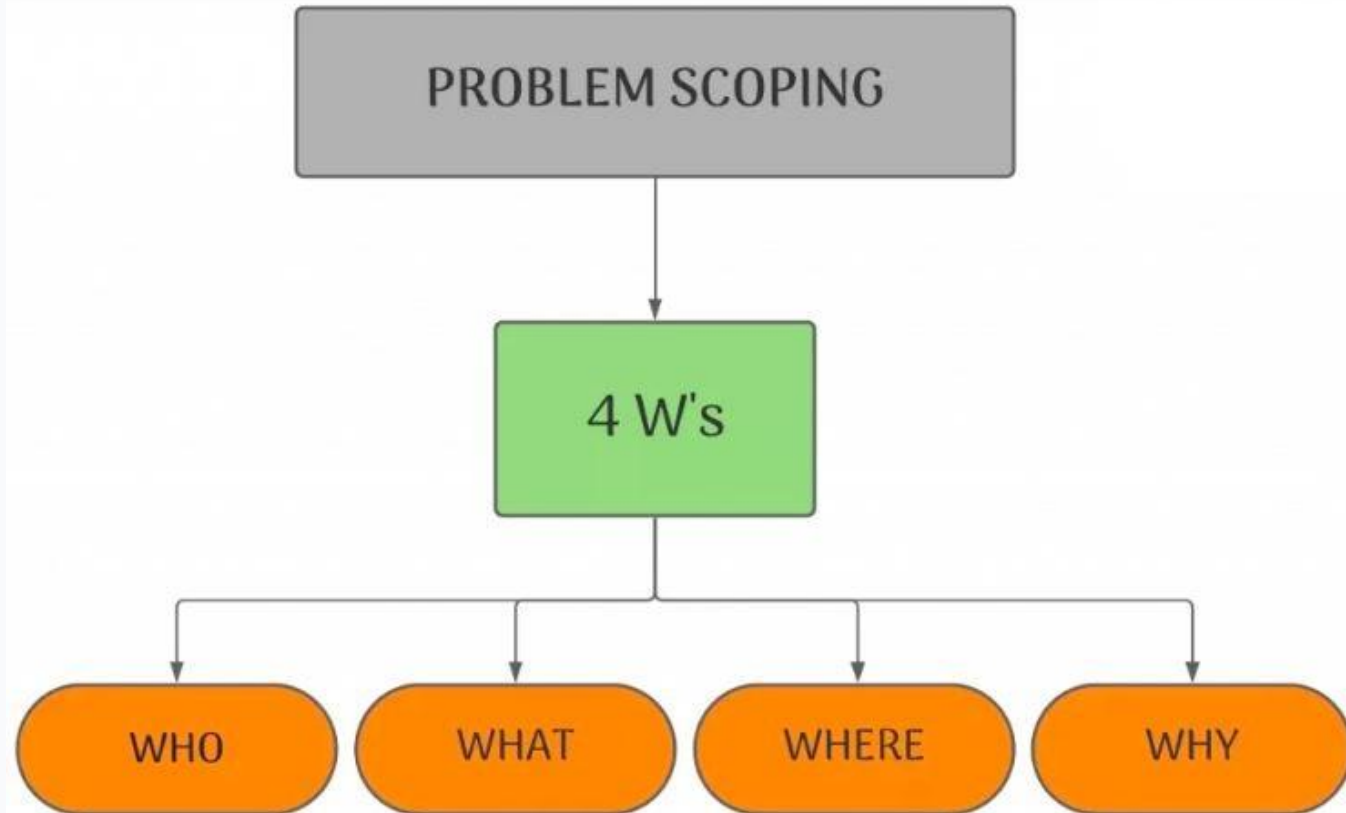
Problem Scoping

- **Who?** - Refers that who is facing a problem and who are the stakeholders of the problem.

- **What?** - Refers to what is the problem and how you know about the problem.

- **Where?** - It is related to the context or situation or location of the problem.

- **Why?** - Refers to why we need to solve the problem and what are the benefits to the stakeholders after solving the problem.

The final outcome of problem scoping is the problem statement template.

The problem statement template

- When the above 4Ws are completely filled you need to prepare a summary of these 4Ws.

- This summary is known as the problem statement template.

- This template explains all the key points in a single template.

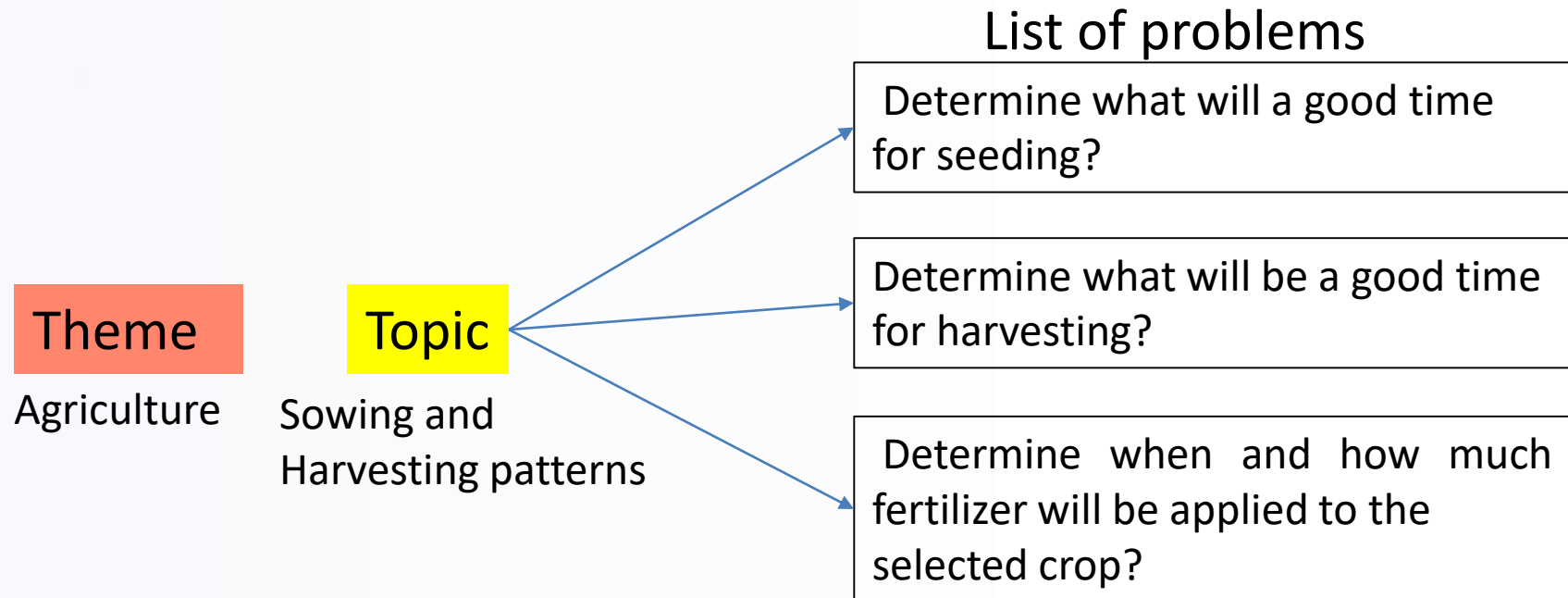- So if the same problem arises in the future this statement helps to resolve it easily.

Activity - Brainstorm around the theme and set a goal for the AI project
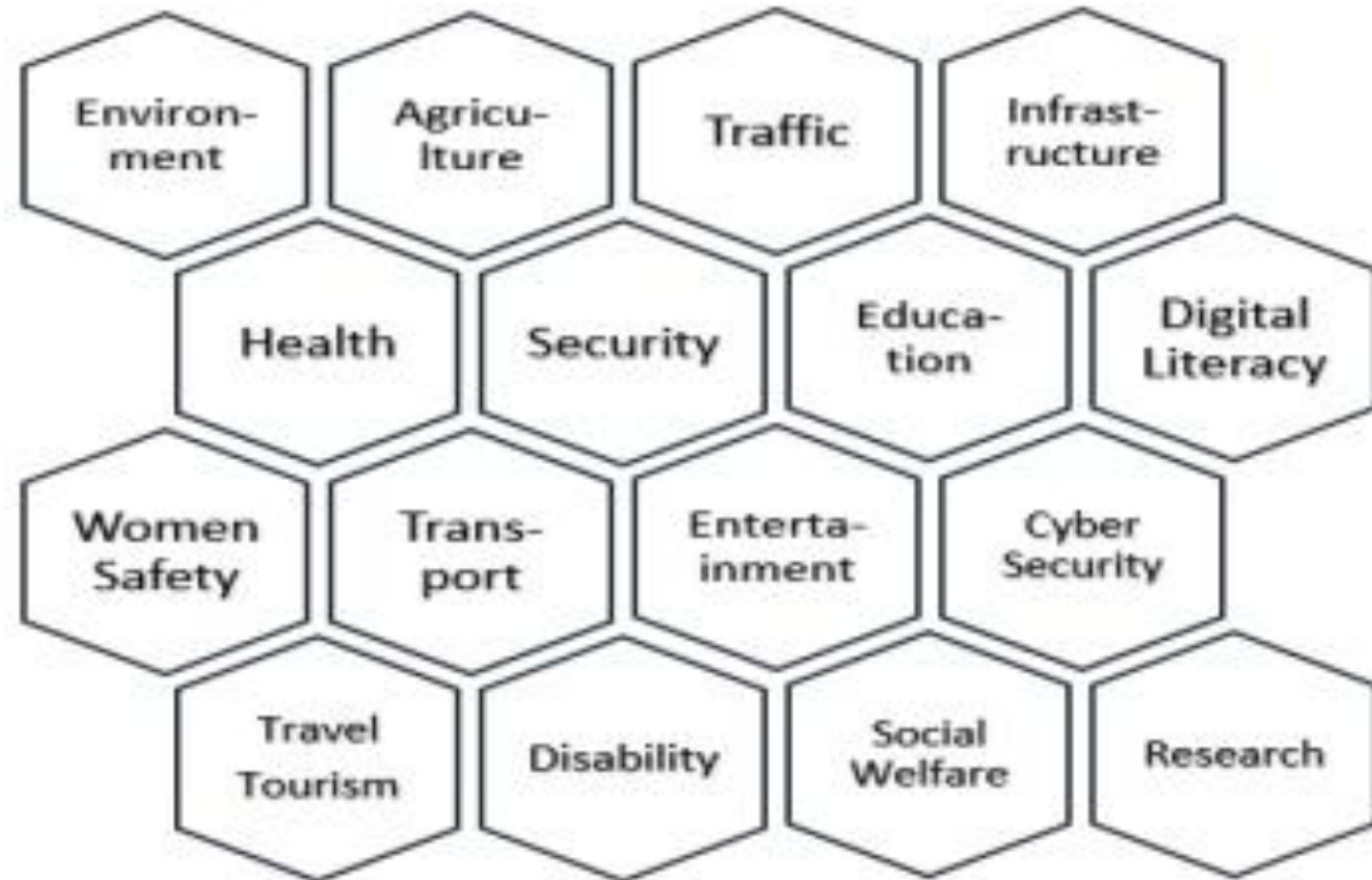
Problem Scoping

1. Select a theme

Eg: Agriculture: this theme includes different topics like pest issues, sowing and harvesting patterns, yield rates etc.

List of problems

Determine what will a good time for seeding?

Determine what will be a good time for harvesting?

Determine when and how much fertilizer will be applied to the selected crop?

Theme

Agriculture

Topic

Sowing and Harvesting patterns

1. Select a goal

Select one problem out of the ones listed above to solve using AI knowledge. This Problem now becomes the target of AI project and helps for getting a clear vision of what is to be achieved.

Eg: Goal is - How might we help farmers determine the best times for seeding and for sowing their crops?

Problem Statement Template

Our	[stakeholders]	Who
has a problem that	[issue, problem, need]	What
when / while	[context, situation].	Where
An ideal solution would	[benefit of solution for them]	Why

3. Final problem statement

	Stakeholders	Who
Our	Farmers, Fertilizer Producers, Labours, Tractor Companies	
has /have a problem that	The problem, Issue, Need	What
	Determine what will a good time for seeding or crop harvesting?	
When/while	Context/Situation	When
	Decide the mature age for the crop and determine its time	
An ideal solution would	Solution Benefits	Why
	Take the crop on time and supply against market demand on time	

4W canvas for Pest Management

Our	Farmers	Who
has a problem that	Cotton Crops got infected with pest -Pink Ballworm	What
when / while	On the crops in the field	Where
An ideal solution would	To create an AI-enabled app that aids farmers in – · Determining the correct amount of pesticides · Knowing the right time to spray pesticides · Increase in Production · Increase in the profit share of the farmers.	Why

- **Acquiring data for the project.**

- What is data?
  - ➤ Data can be a piece of information or facts and statistics collected together for reference or analysis.
  - ➤ Whenever we want an AI project to be able to predict an output, we need to train it first using data.
- **<u>Data features</u>**
  - ➤ Data features refer to the type of data you want to collect.
  - ➤ data features would be salary amount, increment percentage, increment period, bonus, etc.

Data Acquisition

Data Features : type of data you want to collect.

Here two terms are associated with this:

1**. Training Data:** The collected data through the system is known as training data. In other words the input given by the user in the system can be considered as training data.

2. **Testing Data:** The result data set or processed data is known as testing data. In other words, the output of the data is known as testing data.

- ➢ Eg: to make an Artificially Intelligent system which can predict the salary of any employee based on his previous salaries.
- ➢ The previous salary data here is known as **Training Data** while the next salary prediction data set is known as the **Testing Data**
- ➢ **For any AI project to be efficient, the training data should be authentic and relevant to the problem statement scoped. .**

Data Acquisition

Acquiring Data from reliable sources: After mentioning the Data features, you get to know what sort of data is to be collected.

Different data sources are:

Surveys	Web Scraping	Sensors
Cameras	Observations	API(Application Program Interface)

Data sources

1. Web Scraping means collecting data from web using some technologies. We use it for monitoring prices, news and etc.
Example: Web Scrapping. using beautiful soup in python

2. Sensors are very Important but very simple to understand. Sensors are the part of IoT (Internet of things) Sensors collect the physical data and detect the changes.

3. Camera: captures the visual information and then that information which is called image is used as a source of data. Cameras are used to capture raw visual data.

4. Observations: When we observe something carefully we get some information For ex: Scientists Observe creatures to study them. Observations is a time consuming data source.

5. API: Application Programming interface. API is a messenger which takes requests and tells the system about requests and gives the response.
Ex: Twitter API, Google Search API

6 Surveys: The survey is a method of gathering specific information from a sample of people. Example, a census survey for analyzing the population.
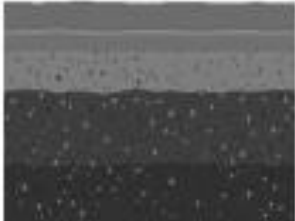
System Maps

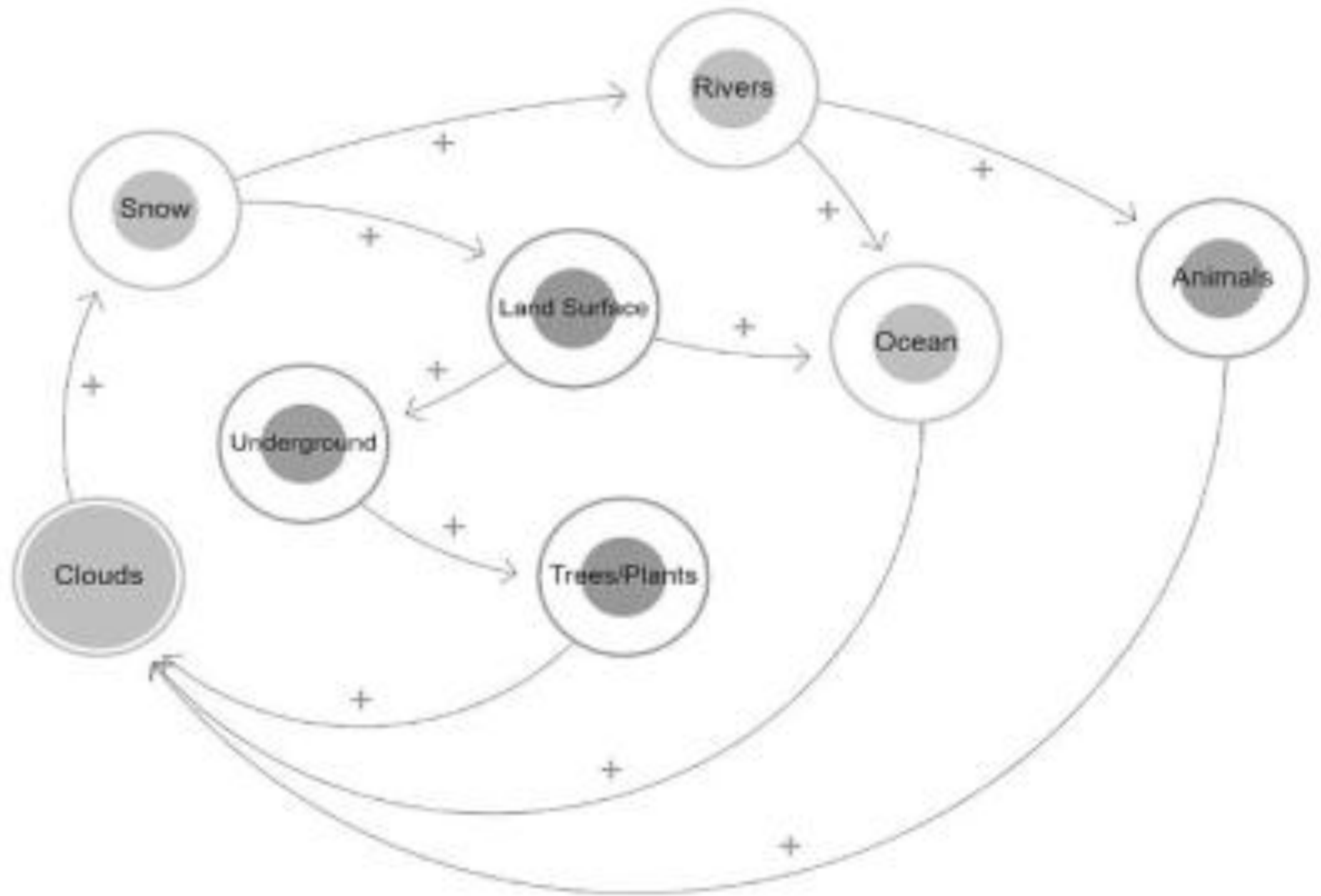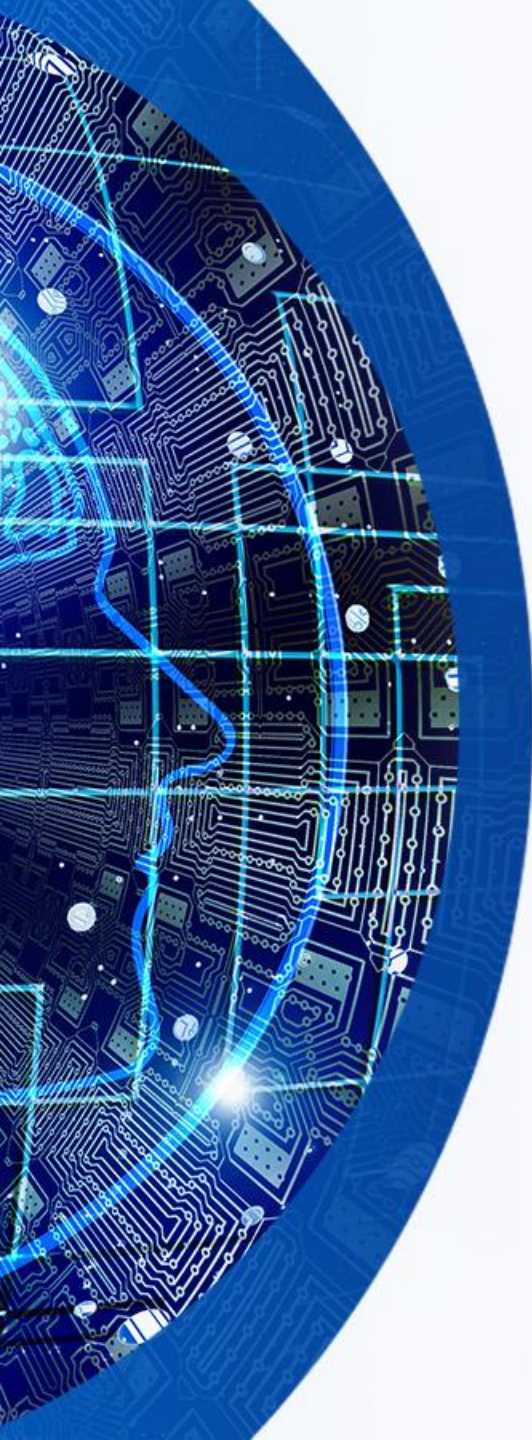- System maps help us to find the relationship between the elements of the problem which we have scoped
- A system map shows the components and boundary of a system and the components of the environment at a point in time.
- The main use of a system map is to help structure a system and communicate the result to others.
- It helps us in strategizing the solution for achieving the goal of our project.
- help to understand complex issues with multiple factors that affect each other
- **Circles** represents the elements,
- **Arrows** represents the relationship between the elements. Length of arrow represents time for a change to happen. This is **time delay. The arrow- head** depicts the direction of the effect and the sign (+ or -) shows their relationship. **If the arrow goes from X to Y with a + sign, it means that both are directly related to each other. If the arrow goes from X to Y with a – sign, it means that both the elements are inversely related to each other .**
- **Loops** represent a specific chain of causes and effects.
- To change the outcome of a system, as a change maker, either change the elements in a system or change the relationships between elements.

System map for Water Cycle.

The major elements of this system are mentioned here.

Clouds	Snow	Underground Soil	Rivers
Oceans	Trees	Land	Animals

Data Exploration

- Data Exploration refers to the techniques and tools used to visualize data through complex statistical methods.

- Advantages of Data Visualization

  - ❖ A better understanding of data

  - ❖ Provides insights into data

  - ❖ Allows user interaction

  - ❖ Provide real-time analysis

  - ❖ Help to make decisions

  - ❖ Reduces complexity of data

  - ❖ Provides the relationships and patterns contained within data

  - ❖ Define a strategy for your data model

  - ❖ Provides an effective way of communication among users
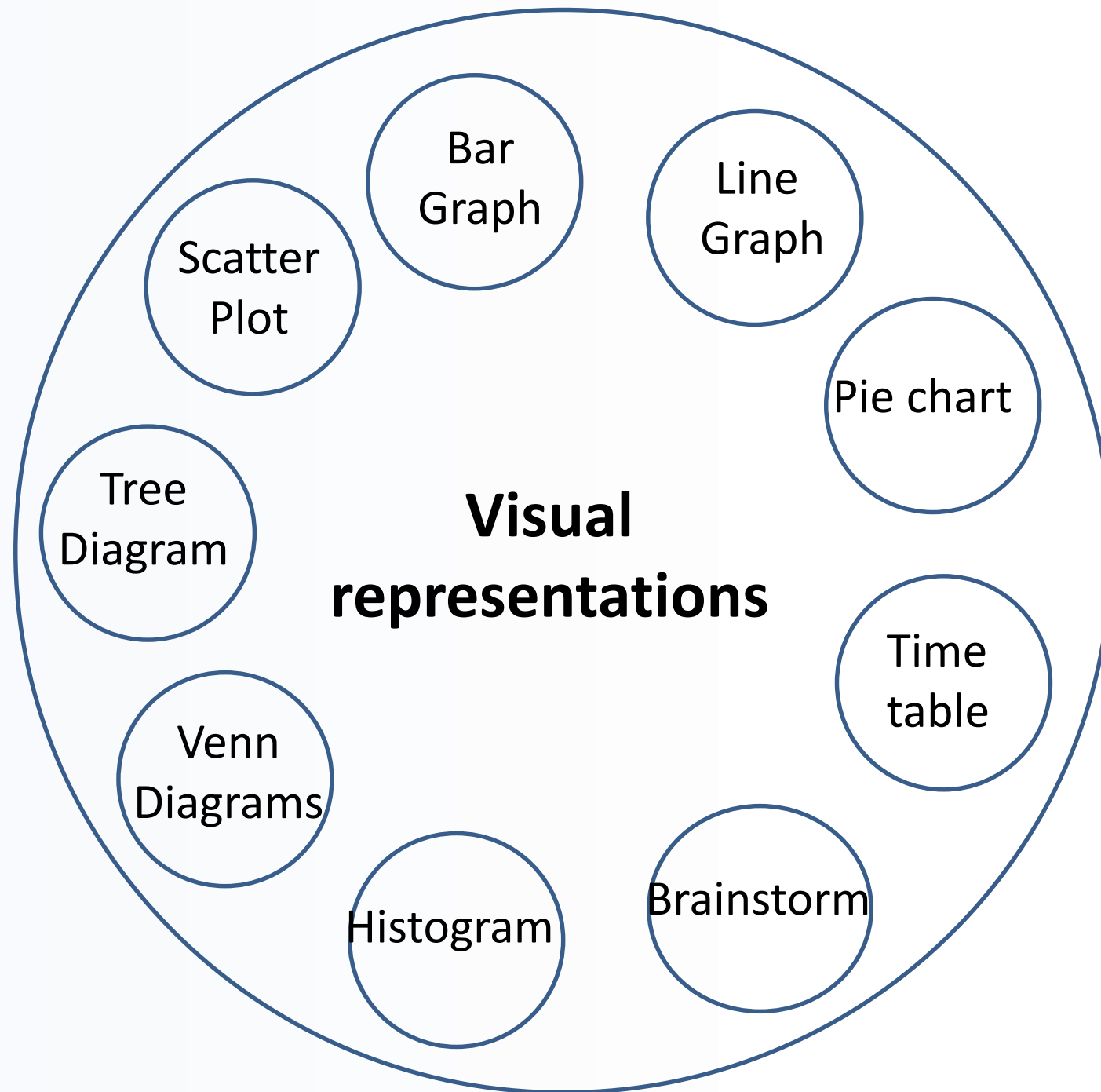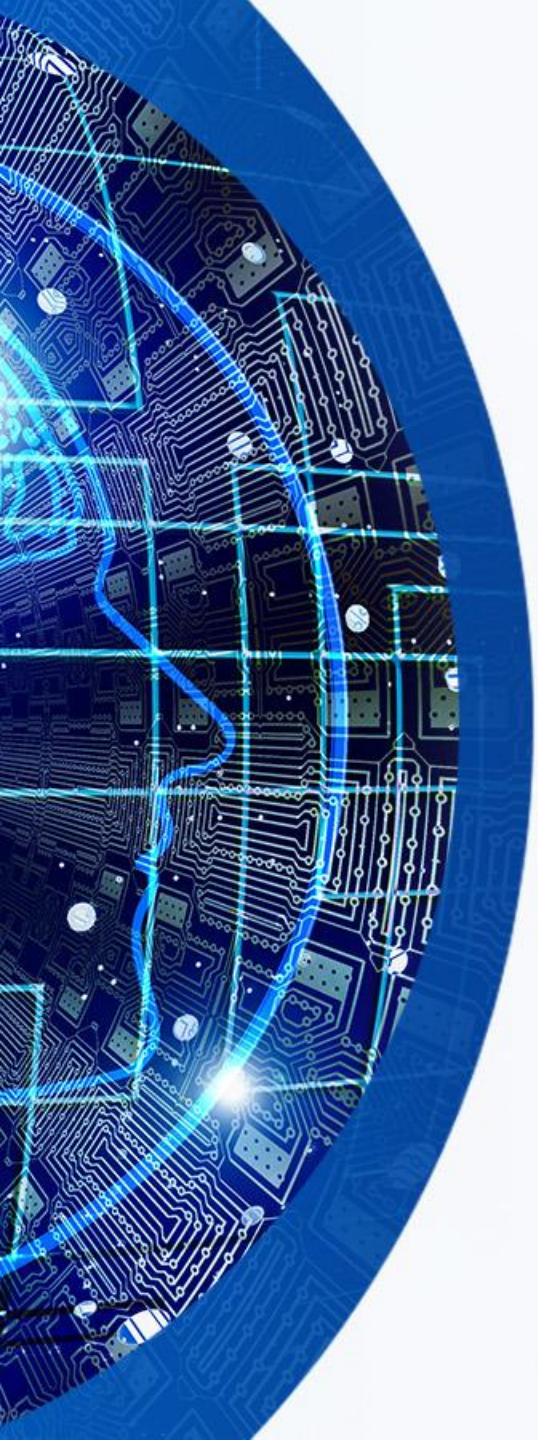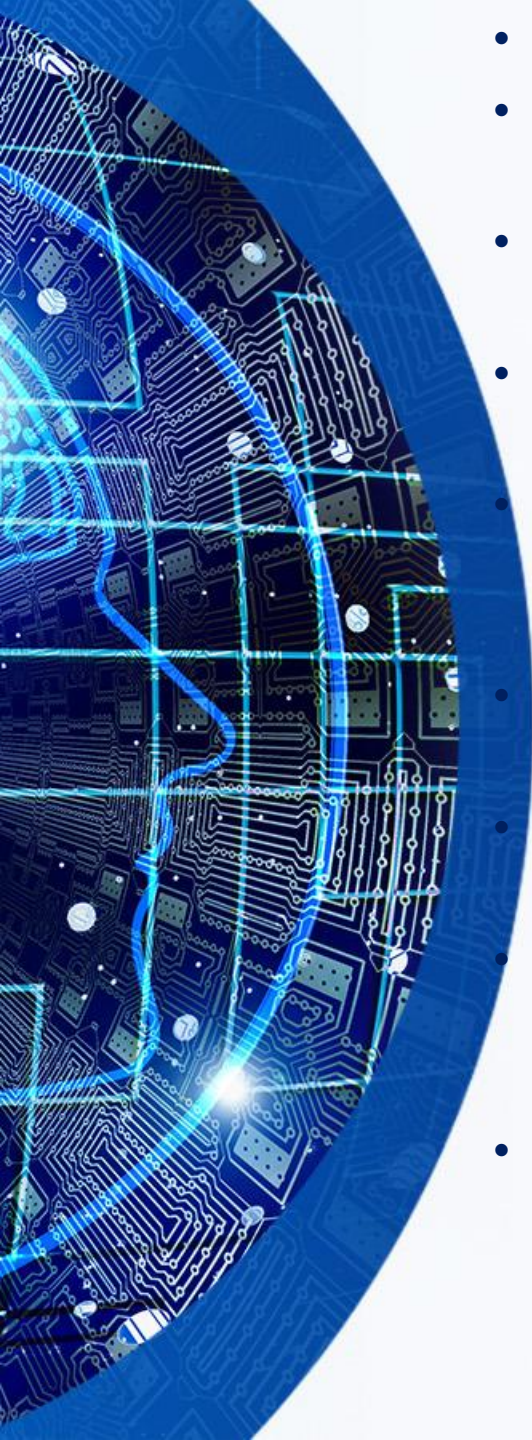
- Types of Graphical Representation
- Bar Graph: This uses either horizontal or vertical bars to categorize and compare different quantities. The length or height of the bar corresponds to the value it represents.
- Pie Chart: This represents data in the form of slices of a circle, where each slice represents a category. The size of each slice is proportional to the category it represents.
- Line Graph: This shows trends over time by connecting data points with straight lines. It's especially useful for showing changes over a period and trends.
- Pictograph: This type of graph uses pictures or icons to represent data values. Each image or icon represents a specific number or quantity, allowing for an easy-to-understand visual comparison.
- Histogram: This is a type of bar graph used to display frequency data. The bars are adjacent to each other, indicating that the data is in intervals.
- Frequency Distribution: This graphical representation (usually a table or a graph) shows how often each different value in a set of data occurs.
- Stem and Leaf Plot: This method of data representation organizes data into a semi-graphical representation that can display large amounts of data, and allows you to see the distribution and shape of the data set.
- Scatter Plot: This is used for displaying values for two variables for a set of data. The data is displayed as a collection of points, each representing the value variables plotted on a horizontal and vertical axes.

Activity: List down 5 new data visualization techniques which you learnt from

Data Visualisation Technique 1	
Name of the Representation	
One-line Description	
How to draw it	
Suitable for which data type?	

How to select a proper graph?

1. Comparison of Values - Show periodical changes i.e. Bar Chart
2. Comparison of Trends - Show changes over a period of time i.e. Line Chart
3. Distribution of Data according to categories - Show data according to category i.e. Histogram
4. Highlight a portion of a whole - Highlight data according to value i.e. Pie Chart
5. Show the relationship between data - Multiple charts can be used

Modelling
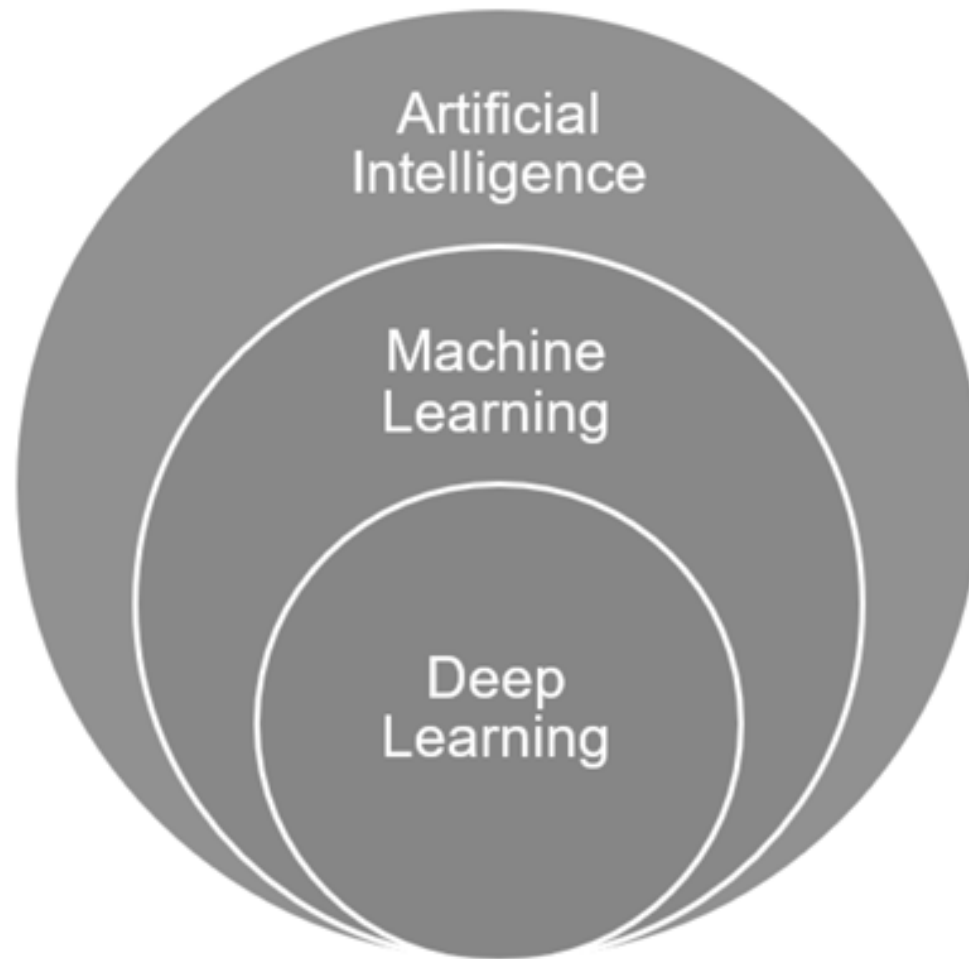
As you can see in the Venn Diagram, Artificial Intelligence is the umbrella terminology which covers machine and deep learning under it and Deep Learning comes under Machine Learning. It is a funnel type approach where there are a lot of applications of AI out of which few are those which come under ML out of which very few go into DL.

Modelling

- **Artificial Intelligence,** or AI refers to any technique that enables computers to mimic human intelligence.
  - An artificially intelligent machine works on algorithms and data fed to it and gives the desired output.
- **Machine Learning,** or ML for short, enables machines to improve at tasks with experience.
  - The machine here learns from the new data fed to it while testing and uses it for the next iteration. The machine learns from its mistakes and takes them into consideration in the next execution.
  - It improvises itself using its own experiences.
- **Deep Learning,** or DL for short, enables software to train itself to perform tasks with vast amounts of data.
  - In deep learning, the machine is trained with huge amounts of data which helps it into training itself around the data. Such machines are intelligent enough to develop algorithms for themselves.

Deep Learning is the most advanced form of Artificial Intelligence out of these three. Then comes Machine Learning which is intermediately intelligent and Artificial Intelligence covers all the concepts and algorithms which, in some way or the other mimic human intelligence.

AI vs ML vs DL

Artificial Intelligence	Machine learning	Deep Learning
AI represents stimulated intelligence in machines.	ML is the practice of getting machines to make decisions without being programmed.	It is artificial neural network to solve the complex problems.
AI is a subset of data science.	ML is the subset of AI and data science.	DL is the subset of AI , ML and data science.
AI aims toward building machines that are capable to think like humans	ML aims to learn through data to solve problems.	DL aim to build neural network that automatically discover patterns

Modelling

- AI Modelling refers to developing algorithms, also called models which can be trained to get intelligent outputs. That is, writing codes to make a machine artificially intelligent.

- The graphical representation makes the data understandable for humans as we can discover trends and patterns out of it.

- But when it comes to machine accessing and analysing data, it needs the data in the most basic form of numbers (which is binary – 0s and 1s) and when it comes to discovering patterns and trends in data, the machine goes for mathematical representations of the same.

- The ability to mathematically describe the relationship between parameters is the heart of every AI model.

- Thus, whenever we talk about developing AI models, it is the mathematical approach towards analysing data which we refer to.

Modelling
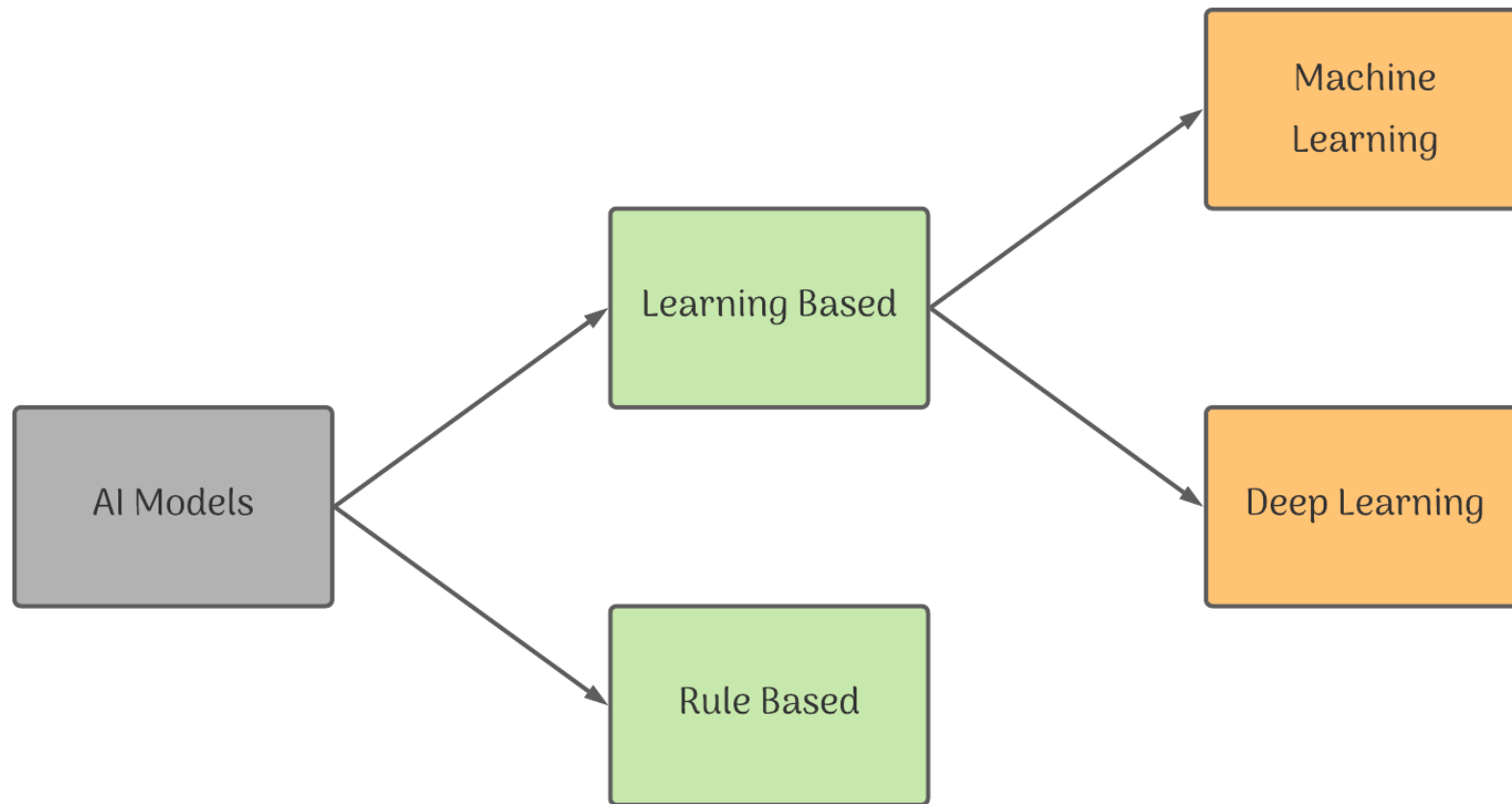
Modelling

Rule Based Approach :

- Rule Based Approach Refers to the AI modelling where the relationship or patterns in data are defined by the developer.

- The machine follows the rules or instructions mentioned by the developer, and performs its task accordingly.

- To train your machine, you feed this data into the machine and label each image as either apple or banana.

- Now if you test the machine with the image of an apple, it will compare the image with the trained data and according to the labels of trained images, it will identify the test image as an apple.

- This is known as Rule based approach. The rules given to the machine in this example are the labels given to the machine for each image in the training dataset.

Labelled Dataset

Machine Trained using

Labelled Dataset

Rule-based AI Model

Testing using

Training data

OUTPUT

Testing Data

Machine identifies the image as
APPLE
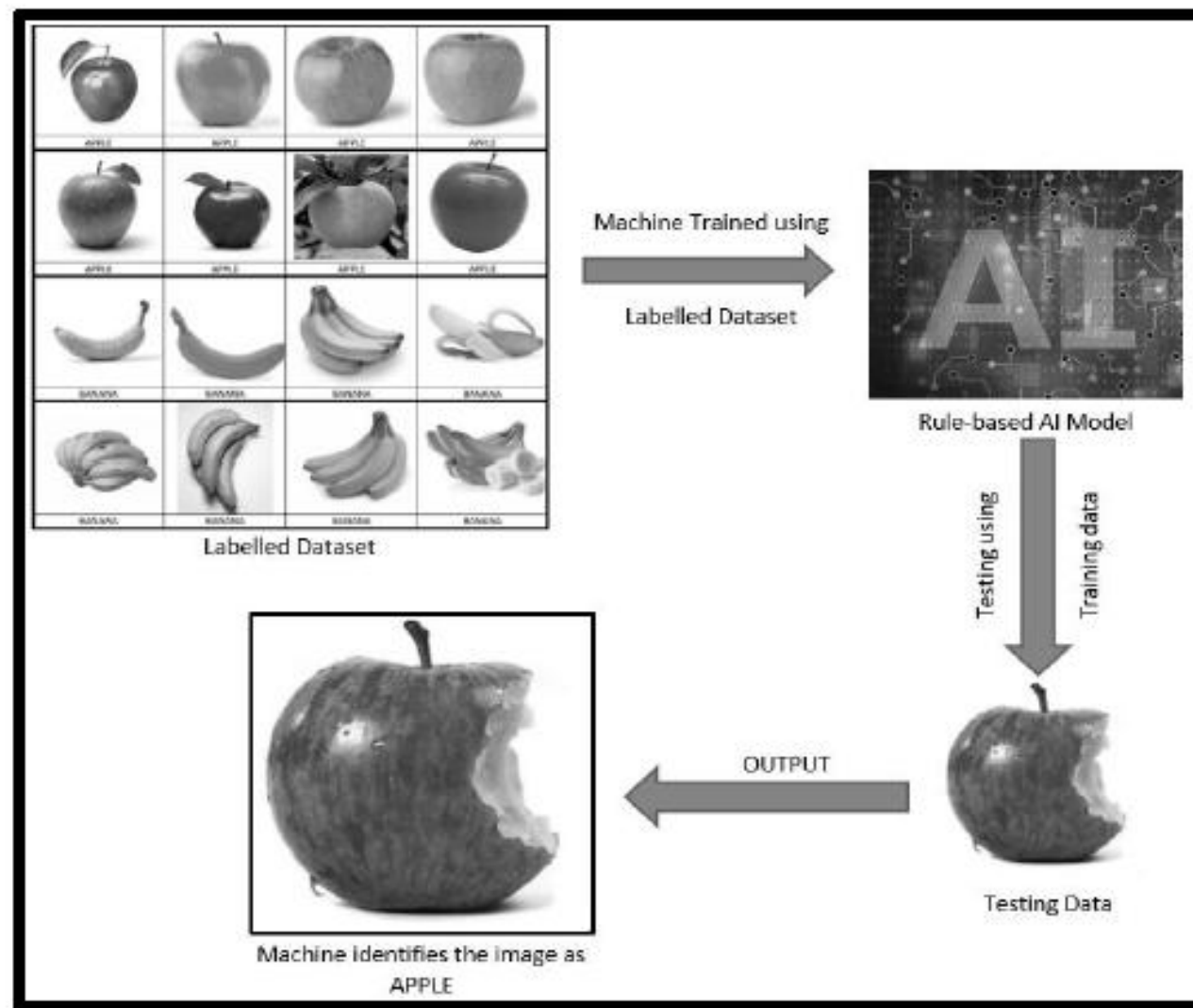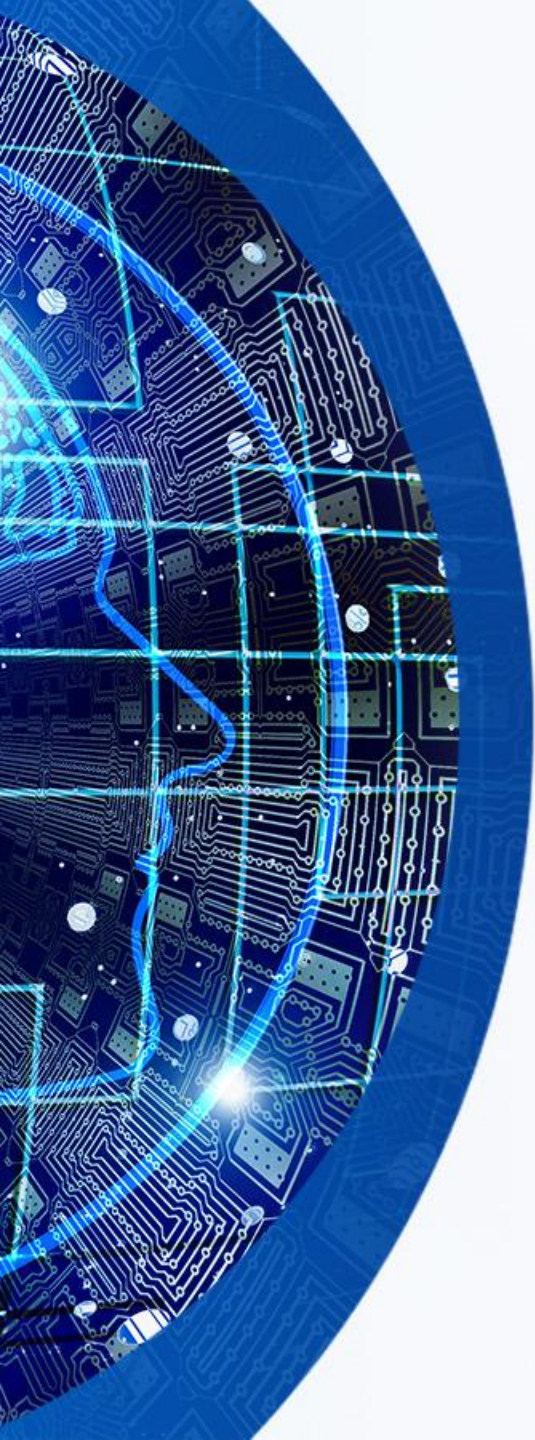
Modelling

Learning Based Approach

- AI modelling where the relationship or patterns in data are not defined by the developer.

- In this approach, random data is fed to the machine and it is left on the machine to figure out patterns and trends out of it.

- Generally this approach is followed when the data is unlabeled and too random for a human to make sense out of it. Thus, the machine looks at the data, tries to extract similar features out of it and clusters same datasets together.

- In the end as output, the machine tells us about the trends which it observed in the training data.

Modelling

Learning Based Approach

- For example, suppose you have a dataset of 1000 images of random stray dogs of your area.

- Now you do not have any clue as to what trend is being followed in this dataset as you don't know their breed, or colour or any other feature.

- Thus, you would put this into a learning approach based AI machine and the machine would come up with various patterns it has observed in the features of these 1000 images.

- It might cluster the data on the basis of colour, size, fur style, etc. It might also come up with some very unusual clustering algorithm which you might not have even thought of!

Modelling

Learning Based AI Model

Unlabelled Dataset

Training Dataset using unlabelled data

Learning Approach AI Model

OUTPUT

Clustering output based on patterns observed by the machine
(Left) Based on size; (Right) Based on colour
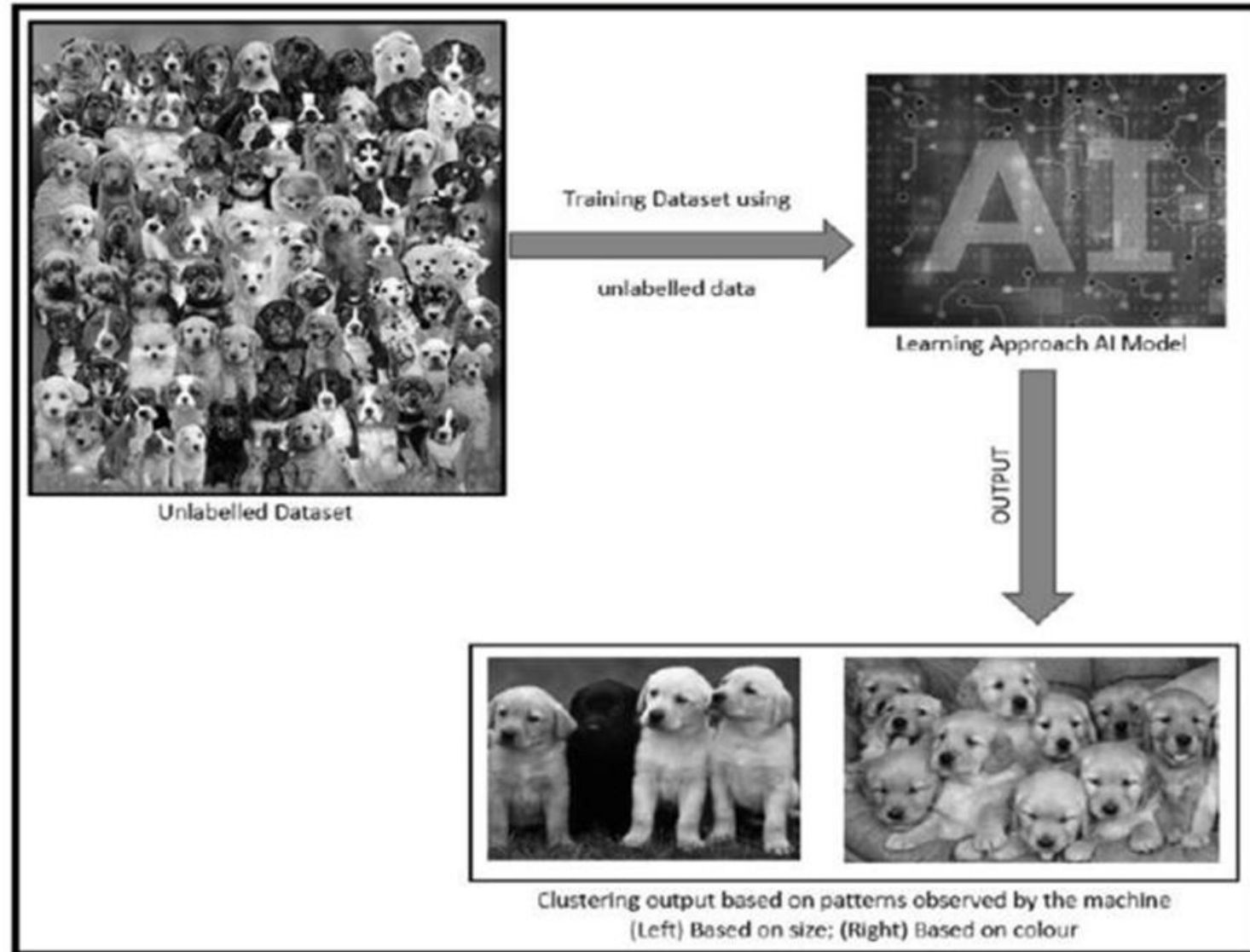
EVALUATION

Introduction

In the Evaluation stage, we will explore different methods of evaluating an AI model. Model Evaluation is an integral part of the model development process. It helps to find the best model that represents our data and how well the chosen model will work in the future

What is evaluation?

Evaluation is the process of understanding the reliability of any AI model, based on outputs by feeding test dataset into the model and comparing with actual answers. There can be different Evaluation techniques, depending of the type and purpose of the model. Remember that It's not recommended to use the data we used to build the model to evaluate it. This is because our model will simply remember the whole training set, and will therefore always predict the correct label for any point in the training set. This is known as <u>overfitting</u>.

The Scenario

Imagine that you have come up with an AI based prediction model which has been deployed in a forest which is prone to forest fires. Now, the objective of the model is to predict whether a forest fire has broken out in the forest or not. Now, to understand the efficiency of this model, we need to check if the predictions which it makes are correct or not. Thus, there exist two conditions which we need to ponder upon: Prediction and Reality. The prediction is the output which is given by the machine and the reality is the real scenario in the forest when the prediction has been made. Now let us look at various combinations that we can have with these two conditions.

Case 1: Is there a forest fire?

Prediction: Yes   Reality: Yes

True Positive

Here, we can see in the picture that a forest fire has broken out in the forest. The model predicts a Yes which means there is a forest fire. The Prediction matches with the Reality. Hence, this condition is termed as **True Positive**.

Case 2: Is there a forest fire?

Prediction: No   **Reality: No**

True Negative

Here there is no fire in the forest hence the reality is No. In this case, the machine too has predicted it correctly as a No. Therefore, this condition is termed as **True Negative**.

Here the reality is that there is no forest fire. But the machine has incorrectly predicted that there is a forest fire. This case is termed as **False Positive**.

Case 4: Is there a forest fire?

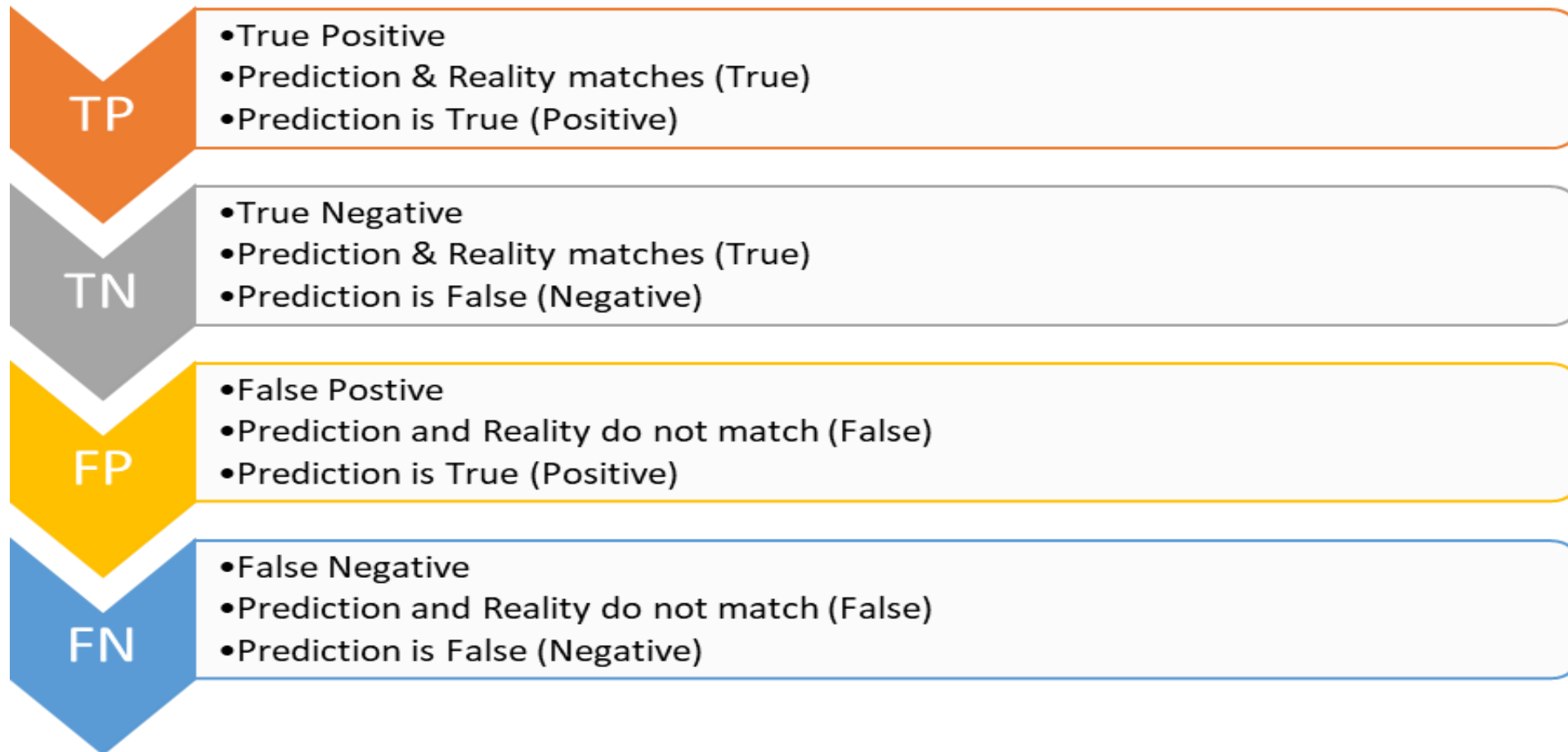**Prediction: No**

Reality: Yes

False Negative

Here, a forest fire has broken out in the forest because of which the Reality is Yes but the machine has incorrectly predicted it as a No which means the machine predicts that there is no Forest Fire. Therefore, this case becomes **False Negative**.

Confusion matrix

The result of comparison between the prediction and reality can be recorded in what we call the confusion matrix. The confusion matrix allows us to understand the prediction results.

TP
- True Positive
- Prediction & Reality matches (True)
- Prediction is True (Positive)

TN
- True Negative
- Prediction & Reality matches (True)
- Prediction is False (Negative)

FP
- False Postive
- Prediction and Reality do not match (False)
- Prediction is True (Positive)

FN
- False Negative
- Prediction and Reality do not match (False)
- Prediction is False (Negative)

DEPLOYMENT

What is deployment?

Deployment as the final stage in the AI project cycle where the AI model or solution is implemented in a real-world scenario. Key Steps in Deployment Process the key steps involved in the deployment process: a. Testing and validation of the AI model b. Integration of the model with existing systems c. Monitoring and maintenance of the deployed model. Some examples of successful AI projects that have been deployed in various industries, such as self driving cars, medical diagnosis systems, and chatbots.

AI can be used on Mobile Apps, Website Apps, etc.

Mobile Application   Website Application

Case Study

Preventable Blindness Problem:

Prevent loss of vision, and delay in report generation

● Approximately 537 million adults (20-79 years) are living with diabetes.

● Diabetes can lead to Diabetic Retinopathy It damages the blood vessels of the retina and can lead to blurred vision and blindness.

● Lack of qualified doctors and delay in reports increase the risk of Diabetic Retinopathy
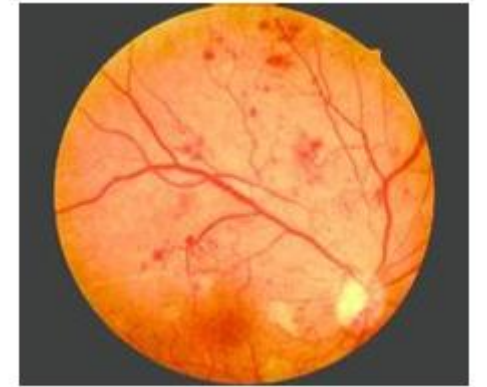
One of the early symptoms of the defect is 'Blurred vision' as shown below:

Normal Vision   Blurred

How can we solve this problem with AI?
Solution: Using AI to detect Diabetic Retinopathy in pictures of eyes .

AI solution at Aravind Eye Hospital, India

● An AI eye screening solution is developed in partnership with Google.
● AI models have achieved an accuracy of 98.6% in detecting diabetic retinopathy, on par with the performance of specialist eye doctors.
● Seventy-one vision centers in rural Tamil Nadu, India are using this solution.
● Trained technicians take pictures of patients' eyes with cameras.
● The digital images are analyzed by AI for the presence of Diabetic Retinopathy.
● AI has made the detection of Diabetic Retinopathy quicker.
● Any technician can use this machine, even without a skilled doctor.

More and more patients can be treated at an early stage. Hence, early detection using AI can significantly benefit rural populations

Let us map this problem to AI project cycle How would you scope the problem?
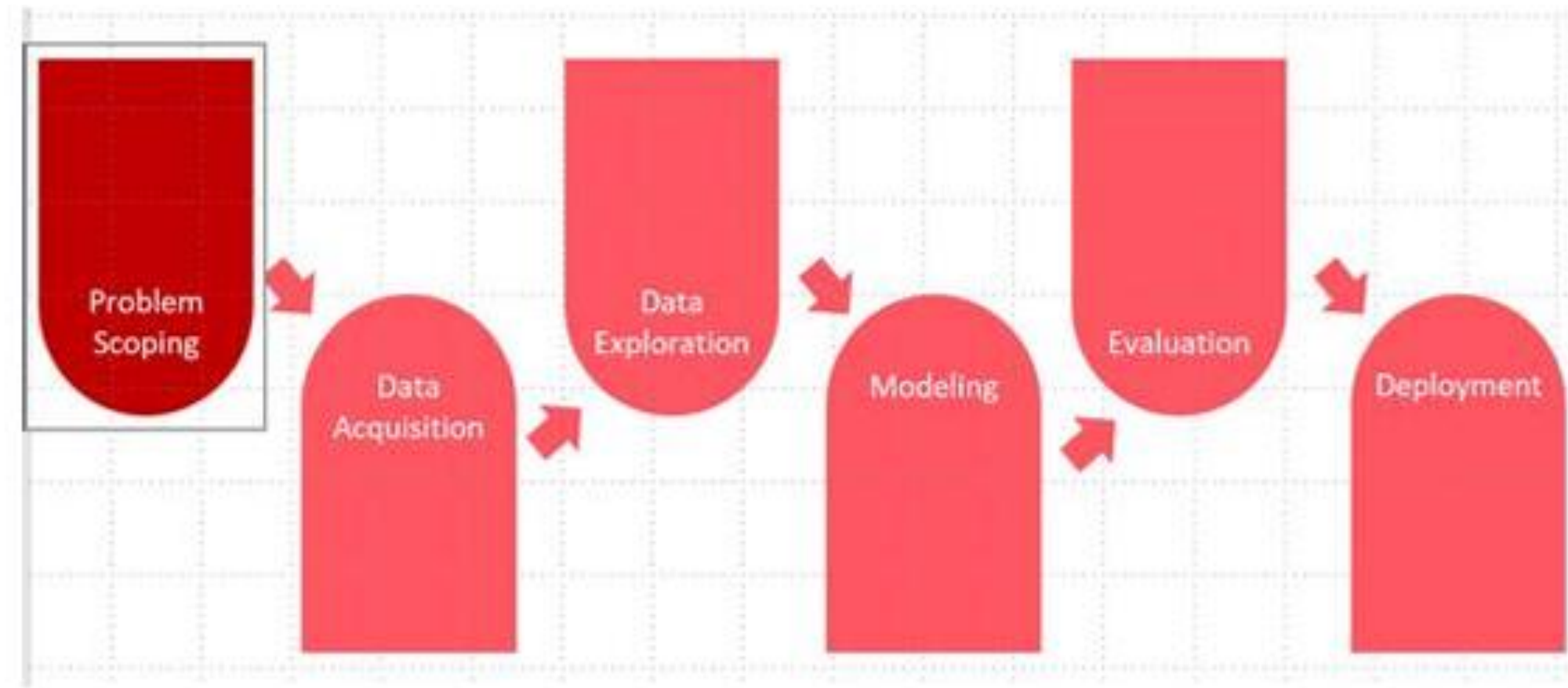
AI Project Cycle Mapping Template				
Data Acquisition	**Data Exploration**	**Modeling**	**Evaluation**	**Deployment**
Collecting data from patients from many clinics using retinal cameras.	Validating all the data to make sense out of it and come up with a model.	Creating an AI model to correctly diagnose Diabetic Retinopathy when given a retinal image as input.	Test the model for accuracy and then fine tune the model further to get the desired out -put.	Using the model in tools that can be used in clinics in even the remote and rural parts of the country.

Ethics and Morality

Ethical Scenario:

Burger

▪ Imagine a situation where you oversee burgers at a fast food restaurant

▪ It is a busy day with a lot of orders coming in fast.

▪ While cooking, you drop a burger on the dirty floor!

▪ Your boss passes by and says, "Just pick it up and serve it!"

▪ What would you do?

Ethical Questions:

Examples of Ethical questions

• If a shopkeeper gives me back more money than what is due, is it better to return it? Or should I keep it with me?

• Is taking pens from a library considered stealing?

• Is taking extra paper napkins from a restaurant considered theft?

• You order a new dress from Amazon and after wearing it on your friends birthday party, you returned it stating the reason inappropriate fitting.

Moral Questions

Examples of moral questions

• Is it OK to lie? If so, under what circumstances?

• If a family is hungry and has no other way to get food, is it OK to steal food from a rich store owner? Why or why not?

• Is a collective decision made by people, always, right? Or can it be wrong?

Morals	Ethics
• The beliefs dictated by our society.	• The guiding principles to decide what is good or bad.
• Morals are not fixed and can be different for different societies.	• These are values that a person themselves chooses for their life.

• Examples:
  • Always speak the truth
  • Always be loyal
  • Always be generous
	• Examples:
	  • Is it good to speak the truth in all situations?
	  • Is it good to be loyal under all circumstances?
	  • Is it necessary to always be generous?

Ethics and Personal Data

There is a student named Jack

▪ Jack spends a lot of time on the internet every day.

▪ He does his research assignments, connects with his friends, uses social media, plays his favorite games, and shops on the internet.

▪ This means that a lot of his personal information is on the internet.

| He uses personal voice assistant on his phone to play music and make calls. | He uses his phone camera to click a lot of pictures and store them safely on his phone. | He searches the internet whenever he needs any new information or if he wants to buy something. |

Major Issues around AI Ethics

Let's learn some more about Jack:

▪ He is an average middle school student.

▪ His school recently started using an AI-based essay grading system.

▪ The system takes in an essay and assigns grades after evaluation.

▪ Jack is worried that he scored a bad grade, even though he wrote a really good essay.

The reason was that the data used by the AI algorithm to learn how to grade essays was faulty.

What could have possibly gone wrong?

The AI had learnt from data from students who were in universities.

The data had been collected from students who also happened to live in a different country.

This is an example of how AI can be wrong at times, because of faulty or biased data.

AI Ethics Principles

What are the principles of AI Ethics?

Identifying the principles

● To make AI better, we need to identify the factors responsible for it.

● The following principles in AI Ethics affect the quality of AI solutions

▪ Human Rights

▪ Bias

▪ Privacy

▪ Inclusion

Human Rights

● When building AI solutions, we need to ensure that they follow human rights.

● Here are a few things that you should take care of

▪ Does your AI take away Freedom?

▪ Does your AI discriminate against People?

▪ Does your AI deprive people of jobs?

▪ What are some other human rights which need to be protected when it comes to AI?

Bias

● Bias (partiality or preference for one over the other) often comes from the collected data. The bias in training data also appears in the results.

● Here are a few things that you should take care of :
▪ Does your data equally represent all the sections of the included populations?
▪ Will your AI learn to discriminate against certain groups of people?
▪ Does your AI exclude some people?
▪ What are some other biases that might appear in an AI?

Privacy

● We need to have rules which keep our individual and private data safe.

● Here are a few things that you should take care of
▪ Does your AI collect personal data from people?
▪ What does it do with the data? ▪ Does your AI let people know about the data that it is collecting for its use?
▪ Will your AI ensure a person's safety? Or will it compromise it?
▪ What are some other ways in which AI can breach someone's privacy?

Inclusion

● AI MUST NOT discriminate against a particular group of population, causing them any kind of disadvantage.

● Here are a few things you should take care of

▪ Does your AI leave out any person or a group?

▪ Is a rich person and a poor person benefitted equally from your AI?

▪ How easy is it to use your AI?

▪ Who does your AI help?

▪ How can we make AI more inclusive?

Human Rights: Basic rights that every person has, like freedom, safety, education, and equality.

In AI: When we use AI, we must ensure it does not harm people or take away their rights.

Example: If a camera system is used in public places, it should be for safety, not to constantly watch students unfairly.

Bias : When something is unfair or favors one side more than the other.

In AI: If AI is trained on wrong or incomplete data, it may treat some people unfairly.

Example: If an AI for job interviews has only been trained with data of men, it may favor men over women.

Privacy : Keeping personal information safe and not sharing it without permission.

In AI: AI tools often collect data (like names, photos, or locations). This must be protected.

Example: If a health app collects your heartbeat data, it should not share it with others without your consent.

Inclusion : Making sure everyone is included and no one is left out.

In AI: Technology should work for all people, regardless of language, ability, or background.

Example: A voice assistant should understand both male and female voices, and also different accents.