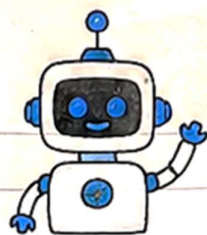


PROJECT: AI ASSISTANT

Chapter Notes



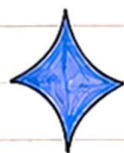
1. AI TOOLS USED IN THE PROJECT

AI tools are software or online platforms that use Artificial Intelligence to perform specific tasks.

AI TOOL / SOFTWARE	USED FOR
• ChatGPT	Generating stories and text from prompts.
• Gemini	Generating stories and other responses using prompts.
• AutoDraw	Assisting in recognising and improving drawings.
• Google Teachable Machine	Training machines to recognise images, sounds and poses.
• Scratch AI	Creating AI-based interactive projects.
• MIT AI Raise Playground	Developing and experimenting with AI-based projects.

2. CHATGPT AND GEMINI

- ChatGPT and Gemini are Generative AI tools.
- They can generate text-based responses according to the instructions given by the user.
- In the activity "Is AI Creative?", these tools were used to generate stories.
- Students wrote their own stories first and then used AI tools to generate another version of the story.
- Both stories were compared.



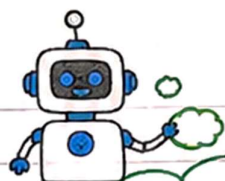
Note : The quality and type of response generated by an AI tool depend upon the instructions given to it. Therefore, clear and detailed instructions are important.



☆ **Key Idea :** AI tools can assist us in writing, drawing and many other creative tasks, but the final result depends on the information we provide.

3. PROMPT AND GENERATIVE AI

- A Prompt is an instruction, question or description given to an AI tool to obtain a response.
- Generative AI is a type of AI that can generate new content such as text, stories, images, etc. according to the instructions given by the user.



Better and more detailed prompts can help AI generate more specific and useful responses.

EXAMPLE OF SIMPLE PROMPT

Write a story about a mela.
(Limited information)



EXAMPLE OF DETAILED PROMPT

Write a story about my visit to a village mela. Include colourful shops, games, food, music and my experiences.
(Provides more information)

Steps to improve an AI generated story :

Write a story idea.



Create a prompt.



Generate story using AI tool.



Compare the stories.



Add more details to the prompt and generate again.

4. AUTODRAW

- AutoDraw is an AI-assisted drawing tool.
- It helps users by recognising rough sketches and suggesting possible drawings.
- Students can create a rough drawing and observe how the tool can help improve or recognise the drawing.



AutoDraw is used for:

- Making drawings
- Assisting with rough sketches
- Recognising simple drawings
- Providing drawing suggestions

5. WHAT IS GOOGLE TEACHABLE MACHINE ?

- Google Teachable Machine is a web-based tool used to create and train Machine Learning models without writing code.
- It allows users to teach a computer to recognise images, sounds and poses by providing examples.
- The trained model can be tested using new examples and then used in other projects.

Teachable Machine is a web-based tool and does not require coding to create a basic model.



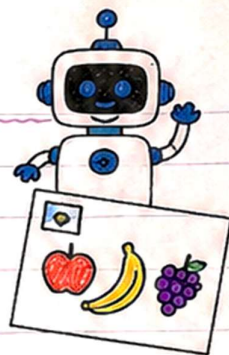
Main Project Types in Teachable Machine :

- ⇒ Image Project (used for image recognition)
- ⇒ Audio Project (used for sound recognition)
- ⇒ Pose Project (used for pose recognition)



6. USING GOOGLE TEACHABLE MACHINE - IMAGE MODEL (STEPS)

We will learn the steps to create an Image Model. Let us suppose we want to make a model to recognise different fruits.



STEPS TO CREATE AN IMAGE MODEL

Step 1: Open a web browser and go to teachablemachine.withgoogle.com

Step 2: Click on "Get Started".

Step 3: Select "Image Project".

Step 4: Choose "Standard Image Model".

Step 5: Click on "Add a class" and type the name of the class.
(e.g., Apple)

Step 6: Add another class for another fruit. (e.g., Banana)

Step 7: Add more classes as per your data.

Step 8: Add image samples to each class using Webcam or Upload.

Step 9: Collect enough images for each class (more samples = better training).

Step 10: Click on "Train Model". The machine will learn from the examples.

Step 11: After training, test the model using "Preview" panel.

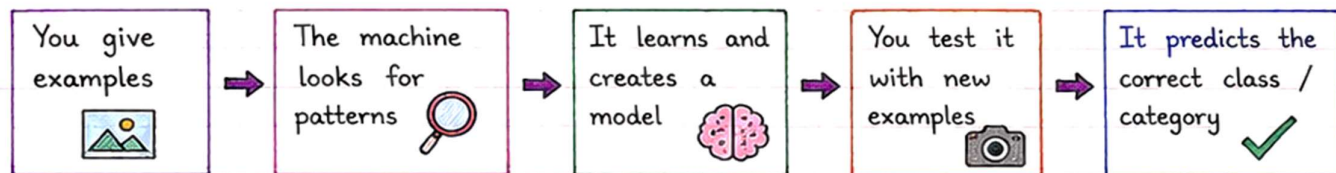
Step 12: Show a new image (using webcam or upload) and see the result.

Step 13: If the result is not correct, add more images and train again.

Important

The model learns from the examples you provide. So good and varied data gives better results.

HOW TEACHABLE MACHINE WORKS ?



7. CLASSES (CATEGORIES)

- In Teachable Machine, each class is a group of similar items.
- Every image in a class should be of the same object.
- Example :

Class Name	Examples of Images
Apple	  
Banana	  
Grapes	  

8. TESTING THE MODEL

- After training, the model is tested.
- There are two ways to test :

1. With Webcam :

Show any object in front of webcam and see which class the model predicts.



2. With Upload :

Upload a new image from computer and check the prediction.



9. IMPROVING THE MODEL

- If the model gives wrong results, it means it needs more or better examples.
- Add more suitable images in the correct class.
- Click on "Train Model" again.
- Test the model again.
- This process is called "Retraining".



Remember

More good quality examples → Better Training
Better Training → Better Results



10. RETRAINING THE MODEL

- Sometimes the model may not give correct results.
- This happens when the machine has not learnt enough examples.
- To improve the model, we add more and better examples and train it again.
- Training the model again after adding new data is called "Retraining".

Steps of Retraining

1. Test the model.
2. Check where it gives wrong results.
3. Add more suitable images in the correct class.
4. Click on "Train Model" again.
5. Test the model again.



11. OTHER TYPES OF MODELS IN TEACHABLE MACHINE

(A) IMAGE MODEL

- It is used to recognise different objects, fruits, animals, plants, etc.
- It is trained using images or photographs.



(B) AUDIO MODEL

- It is used to recognise different sounds.
- It is trained using audio recordings.
- Examples - bird sounds, clapping, speaking different words, etc.



(C) POSE MODEL

- It is used to recognise different human poses.
- It is trained using webcam.

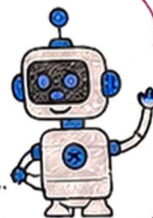


12. MAKING AI ASSISTANT INTERACTIVE

- After training the model, we can make an AI Assistant.
- An AI Assistant can talk with the user and give useful information.
- To make it more interesting, we can add character, questions, personality and animation.

An AI Assistant can have :

- ★ A Character - e.g., a guide, a robot, a historical person, etc.
- ★ Questions - to ask the user.
- ★ Personality - friendly, serious, funny, etc.
- ★ Animation - to make it more engaging.



13. AI TOOLS USED AND THEIR PURPOSES

AI Tool		Used For	Description
ChatGPT		Generating stories, text and answers	It is a generative AI tool that creates text based on the prompt given.
Gemini		Generating stories, information, etc.	Another generative AI tool that gives responses based on the instructions.
AutoDraw		Improving and recognising drawings	It helps in making drawings by recognising rough sketches and suggesting drawings.
Google Teachable Machine		Training AI models (image, audio, pose)	A web-based tool used to teach machines without coding.
Scratch AI		Creating interactive AI projects	It helps in making AI-based projects with characters and interactions.
MIT AI Raise Playground		Exploring and building AI projects	A platform to learn, experiment and create AI-based activities.

14. COMPLETE PROCESS OF DEVELOPING AN AI ASSISTANT

The development of an AI Assistant is a step-by-step process.

- Step 1** → Decide the Purpose - What will the AI Assistant do?
- Step 2** → Create Categories and Sub-categories - Organise the information.
- Step 3** → Collect Data - Collect suitable images, sounds or videos.
- Step 4** → Organise and Label Data - Place the data in correct classes.
- Step 5** → Train the Model - Teach the machine using the collected data.
- Step 6** → Test the Model - Check if the model works correctly.
- Step 7** → Improve and Retrain - Add more data if needed and train again.
- Step 8** → Make the Assistant Interactive - Add character, questions, personality and animation.
- Step 9** → Share with Others and Get Feedback - Improve the project based on feedback.

This process helps in creating a useful and effective AI Assistant.

15. DATA COLLECTION - IMPORTANT POINTS

- Collect data according to the purpose of the model.
- Use different types and variations of examples.
- Make sure the data is clear and correct.
- Do not mix data of different classes.
- More good quality data gives better results.

Sources of Data

- Camera
- Smartphone
- Computer / Laptop
- Internet (if required)



16. CATEGORIES AND SUB-CATEGORIES

- A Category is a broad group of related items.
- A Sub-category is a smaller and more specific group within a category.
- Organising data in categories makes training easy and better.

Category	Sub-categories (Examples)
Plants	Trees, Flowers, Bushes, Vegetables
Animals	Birds, Insects, Other Animals
Food	Fruits, Snacks, Drinks, Dishes
Tourist Places	Historical Places, Parks, Museums
Music	Folk Music, Classical Music

17. DIFFERENCE BETWEEN TRAINING, TESTING AND RETRAINING

Training	Testing	Retraining
• Training is the process of teaching the machine using examples or data. • It helps the machine learn patterns. • Done after collecting and organising data.	• Testing is checking if the trained model works correctly. • It is done using new examples (webcam or upload). • It shows how well the model recognises new data.	• Retraining is training the model again after adding new or better data. • It is done when the model gives wrong results. • It improves the accuracy of the model.

18. WHY FEEDBACK IS IMPORTANT ?

Feedback helps us to find problems, know what is good and how to make the AI Assistant better.



Feedback shows us :

1. What is working well.
2. What problems users face.
3. What can be improved.
4. What new features can be added.

Examples of Feedback

- Easy to use
- Needs more options
- Voice is good
- Add more information
- Change the character

19. GOOGLE TEACHABLE MACHINE - DETAILED STEPS (IMAGE MODEL)

Google Teachable Machine helps us to train the machine using images.

Here are the detailed steps to create an Image Model -

- Step 1 : Open a web browser.
- Step 2 : Go to the website - teachablemachine.withgoogle.com
- Step 3 : Click on "Get Started".
- Step 4 : Select "Image Project".
- Step 5 : Choose "Standard Image Model".
- Step 6 : Click on "Add a class" and rename the class.
(e.g., Mango)
- Step 7 : Add more classes if required. (e.g., Banana, Apple)
- Step 8 : Add image samples to each class using Webcam or Upload option.
- Step 9 : Collect more images for better training.
- Step 10 : When enough images are added, click on "Train Model".
- Step 11 : After training is completed, test the model using Preview panel.
- Step 12 : Show a new image (webcam or upload) and see the result.
- Step 13 : If the result is not correct, add more images and train again (Retraining).

Project Types in Teachable Machine

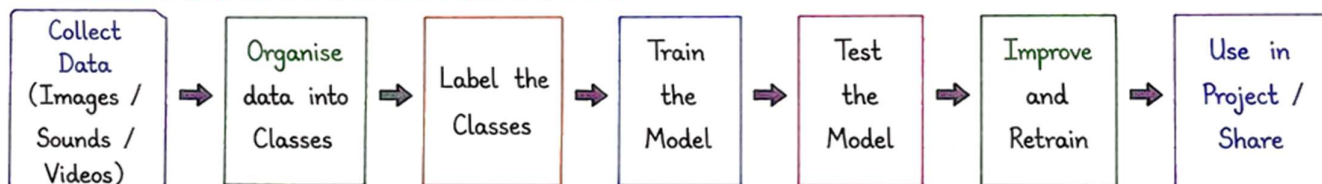
- **Image Project**
(used for image recognition)
- **Audio Project**
(used for sound recognition)
- **Pose Project**
(used for pose recognition)

Important

More and better quality examples → Better training
Better training → Better results



20. FLOW OF WORK IN TEACHABLE MACHINE



21. IMAGE, AUDIO AND VIDEO DATA - EXAMPLES

Type of Data	Examples	Used for	Tools
Image Data		Recognising objects, fruits, plants, animals	Teachable Machine (Image Project)
Audio Data		Recognising sounds, voices, languages	Teachable Machine (Audio Project)
Video Data		Recognising actions, movements, activities	Teachable Machine (Pose / Video based)

22. EXPORTING THE MODEL

- After training and testing, the model can be used in other projects.
- Click on "Export Model".
- Choose the required format or option.
- Download and use the model in apps, websites or other projects.



23. INTERACTIVE AI ASSISTANT - MAIN COMPONENTS

Component	Description
• Character	A character represents the AI Assistant (e.g., a guide, robot).
• Questions	Questions are asked to the user to get information.
• Responses	The AI Assistant gives useful and correct responses.
• Personality	It can be friendly, serious, funny or informative.
• Animation	Animations make the Assistant more engaging and interesting.

Remember

AI does not think like humans. It learns from examples. The more good examples we give, the better it performs.

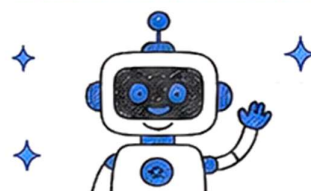


24. TECHNICAL TERMS - DEFINITIONS

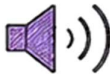
Term	Definition
AI (Artificial Intelligence)	A technology that enables machines to learn from data and perform tasks.
AI Assistant	An AI based system designed to help users by providing information or doing tasks.
Data	Information collected and used for a purpose.
Class / Category	A group of similar examples. Each class has one label.
Label	The name given to a class or category.
Training	The process of teaching the machine using examples so that it can learn.
Testing	The process of checking if the trained model can recognise new examples correctly.
Retraining	Training the model again after adding more or better data.
Model	A trained system that can recognise or predict something.
Exporting	Saving or downloading the trained model for use in other projects.

Key Points

- Good data → Better training
- Better training → Better model
- Better model → Better results
- More data → Improved model



25. DIFFERENCE BETWEEN IMAGE, AUDIO AND VIDEO MODELS

Image Model	Audio Model	Video Model
• Trained using pictures or photographs. 	• Trained using sounds or audio recordings. 	• Trained using video clips or movements. 
• Example - recognising fruits, animals, plants.	• Example - recognising bird sounds, words, languages.	• Example - recognising actions, activities, movements.
• Collected using camera, phone or upload.	• Collected using microphone or upload.	• Collected using camera or upload.

Remember

We use the type of model which is suitable for the task we want the machine to do.



26. EXAMPLE - AI ASSISTANT FOR A LOCALITY

An AI Assistant can provide information about a locality on the following topics -

Popular Food and Drinks • Local food • Fruits • Snacks 	Plants • Trees • Flowers • Vegetables • Farm crops 	Animals and Birds • Birds • Insects • Other animals 	Music and Dance • Folk music • Dance forms 	Places of Tourist Interest • Historical places • Parks • Old markets 	Communication • Local greetings • Common questions • Useful expressions 
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27. ADVANTAGES OF USING AI TOOLS

- ★ AI tools help us in many tasks.
- ★ They save time and effort.
- ★ They give quick and useful results.
- ★ They help us learn new things.
- ★ They can assist humans, but decisions are taken by humans.

Remember

AI is a helper, not a replacement for human thinking.

