

Code 672

Artificial Intelligence Assistant

NSQF LEVEL – 3

PRACTICAL MANUAL



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Notes

Practical 1

TESTING AN AI MODEL WITH REAL-WORLD TEXT (NLP)

OBJECTIVE

After completing this practical, you will be able to:

know how does AI evaluate Qualitative Data like words and emotions?

REQUIREMENT

- a free AI sentiment analyzer.

PROCEDURE/ACTIVITY

Let's test a pre-trained Natural Language Processing (NLP) model to see how it evaluates human text.

Step 1: Data Acquisition (Live Text Data)

1. Open a new tab and go to Google Maps or an ecommerce website.
2. Find a local restaurant or a product you use.
3. Copy one highly positive review, and one angry/negative review.

Step 2: Modelling & Evaluation

1. Go to a free AI sentiment analyzer.
2. Paste your copied positive review into the text box and click "Analyze" or "Compute".
3. The AI model will process the text and output a label: Positive, Neutral, or Negative, along with a "Confidence Score" (e.g., 98% confident).



Notes

Step 3: Finding the AI’s Weakness (The Challenge)

AI models can be tricked! Try to write a sarcastic sentence in the text box. For example: “Oh great, my flight was delayed by 6 hours. Just what I wanted!”

- Evaluation: Did the AI mark it as Positive because of the words “great” and “wanted”? If so, you have just discovered a flaw in the model during the Evaluation stage! To fix this, developers would need to acquire more data containing sarcasm to retrain the AI.

LEARNER’S OBSERVATIONS

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Instructor’s Signature



Practical 2

VISIT A FEW ONLINE RESOURCES TO PLAY GAMES AND EXPERIENCE THE POWER OF AI

OBJECTIVES

After completing this practical, you will be able to:

- explore the power of AI

PROCEDURE/ACTIVITY

Challenge 1: Rock, Paper, Scissors with AI

In this challenge, you will have to play the famous game of Rock, Paper, Scissors with AI. For this, follow the steps given below –

1. Go to <https://rockpaperscissors-ai.vercel.app/>
2. Read the instructions about the game
3. On the left side of the screen, you will find 3 buttons – ROCK, PAPER, and SCISSORS
4. To start the game, click on any of these buttons. This will be your first move against AI.
5. Every time you make a move, AI will also play and their move will be shown under their score.
6. **Your task is to score 20 points before AI scores 20!**

Challenge 2: Semantris

In this challenge, you will have to play a word association challenge with AI. For this, follow the steps given below:



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1. Go to <https://research.google.com/semantris/>
2. Click on Play Arcade option and go through the tutorial of the game.
3. You need to write words that come to your mind when you see the ones highlighted in blue. The closer your word is, the better score you get.
4. **Your task here is to score 1000 points!**

Challenge 3: Quick, Draw!

In this challenge, you will have to test your drawing skills while AI tries to guess as you draw. For this, follow the steps given below

1. Go to <https://quickdraw.withgoogle.com/>
2. Click on the Let's Draw button.
3. As soon as you click on this button, you will be shown the name of an object that you need to draw in 20 seconds.
4. Keep drawing the closest match to the object while AI tries to identify what you are drawing.
5. **Your task is to get 6/6 correct guesses in the game!**

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Practical 3

LOGIC TO CODE IMPLEMENTATION

OBJECTIVE

After completing this practical, you will be able to:

- Develop and execute simple Python programs to solve real-world logical problems

SOFTWARE REQUIREMENT:

- A Python interpreter installed on computer.

PROCEDURE

1. **Problem:** Calculate the factorial of a user-input positive integer.

2. **Steps:**

- **Step 1: Algorithm Design (Pseudocode):** Write the step-by-step logic.

START

INPUT N

SET factorial = 1

IF $N < 0$ THEN OUTPUT "Error"

ELSE IF $N = 0$ THEN OUTPUT 1

ELSE

FOR i from 1 to N DO

SET factorial = factorial * i



Notes

```

END FOR

    OUTPUT factorial

END IF

END

```

- **Step 2: Flowchart Creation:** Create the corresponding flowchart, paying close attention to the loop structure (initialization, condition, update).

Step 3: Python Program: Write the actual Python code using the for loop and if/else statements based on the designed logic.

```

# Python Code for Factorial Calculation

n_str = input("Enter a non-negative integer: ")

# Error handling for non-integer input (optional but good practice)
try:
    N = int(n_str)
except ValueError:
    print("Invalid input. Please enter an integer.")
    exit()

if N < 0:
    print("Factorial is not defined for negative numbers.")
elif N == 0:
    print("The factorial of 0 is 1.")
else:
    factorial = 1

    # Use a for loop to calculate factorial
    for i in range(1, N + 1):
        factorial = factorial * i

    print(f"The factorial of {N} is {factorial}.")

```

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Practical 4

COMPREHENSIVE DATA ANALYSIS WORKFLOW

OBJECTIVE

After completing this practical, you will be able to:

- do data analysis using a Pandas DataFrame.

REQUIREMENT

- a Pandas DataFrame installed on a computer system
- a simple CSV file (e.g., a mock dataset of student test scores, height/weight data or house prices)

PROCEDURE:

1. **Preparation:** Obtain a simple CSV file (e.g., a mock dataset of student test scores, height/weight data, or house prices).
2. **Steps:**
 - **Step 1: Load and Inspect:** Load the CSV file into a Pandas DataFrame. Use `df.info()` to check for data types and missing values, and `df.describe()` for statistics.
 - **Step 2: Clean and Prepare:**
 - Identify any column with missing values and use `df.fillna(df['ColumnName'].mean())` to impute (fill) the missing values with the mean of that column.
 - Filter the DataFrame to create a new subset containing only data points that meet a specific criteria (e.g., score above 80, or age below 30).



Notes

- **Step 3: Analyze and Transform:**
 - Calculate a new column representing a transformation (e.g., if the scores are out of 50, calculate a new column for percentage using NumPy vectorized operations).
 - Calculate descriptive statistics (like the median) for your filtered subset.
- **Step 4: Visualize and Interpret:**
 - Create a **Bar Chart** to show the count of students who passed vs. failed (assuming a passing score).
 - Create a **Scatter Plot** to show the relationship between two numerical variables (e.g., 'Hours Studied' vs. 'Score').

Interpret: Write a brief statement explaining the main insight derived from the scatter plot (e.g., “The plot shows a positive linear correlation, indicating that more study hours generally lead to higher scores.”).

LEARNER'S OBSERVATIONS

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Practical 5

USING TEACHABLE MACHINE OF GOOGLE TO TEACH A COMPUTER TO RECOGNIZE DIFFERENT OBJECTS OR HAND GESTURES

OBJECTIVE

After completing this practical, you will be able to:

- learn how to train a simple Machine Learning model using images. You will use Teachable Machine of Google to teach a computer to recognize different objects or hand gestures.

REQUIREMENTS

- A laptop or desktop computer with a camera
- An internet connection
- Any two or three simple objects (for example, a book, a pen, or a bottle) or hand gestures (such as a thumbs-up or peace sign)

PROCEDURE/INSTRUCTIONS

Step 1: Open Teachable Machine and Create a New Project

1. Open a web browser and visit: <https://teachablemachine.withgoogle.com>
2. Click **Get Started**.
3. Select **Image Project**, as the activity will use images for training.
4. Choose **Standard Image Model**.



New Project

Open an existing project from Drive.

Open an existing project from a file.

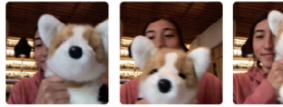
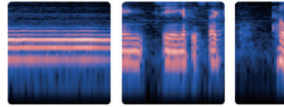


Image Project

Teach based on images, from files or your webcam.



Audio Project

Teach based on one-second-long sounds, from files or your microphone.



Pose Project

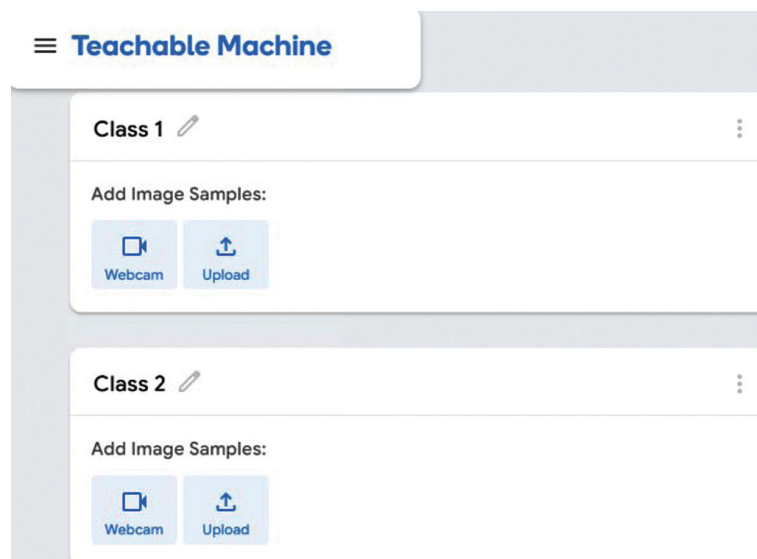
Teach based on images, from files or your webcam.

Your workspace is now ready for creating and training the model.

Step 2: Create Classes

A **class** represents a category that the computer will learn to recognize.

1. By default, you will see **Class 1** and **Class 2**.
2. Rename the classes according to the objects or gestures you want to teach the model. For example:
 - o **Class 1** → **Pen**
 - o **Class 2** → **Book**





Notes

3. To add another category, click **Add a Class** and provide an appropriate name (for example, **Bottle**).

Each class should represent a unique object or gesture that the model will learn to identify.

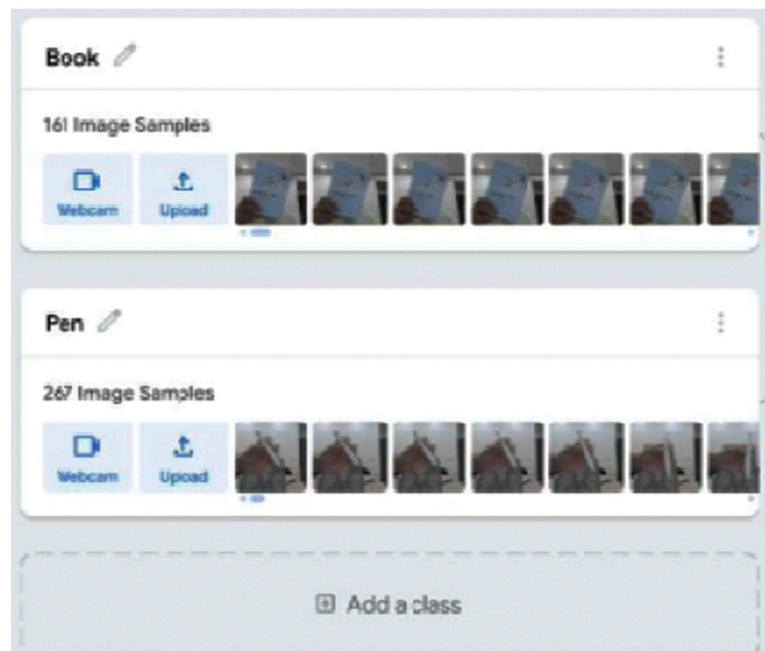
Step 3: Collect Training Images

Now it is time to teach the computer by providing examples for each class. Images can be added in two ways:

- **Using the webcam**
- **Uploading images from the computer**

Using the Webcam (Recommended)

1. Click **Webcam** under **Class 1**.
2. Hold the selected object (for example, a pen) in front of the camera.
3. Click and hold the **Hold to Record** button while slowly moving the object so that it is captured from different angles and positions.
4. Collect approximately **50–100 images** for the class.
5. Repeat the same steps for **Class 2** and any additional classes that have been created.





Tips for Better Training

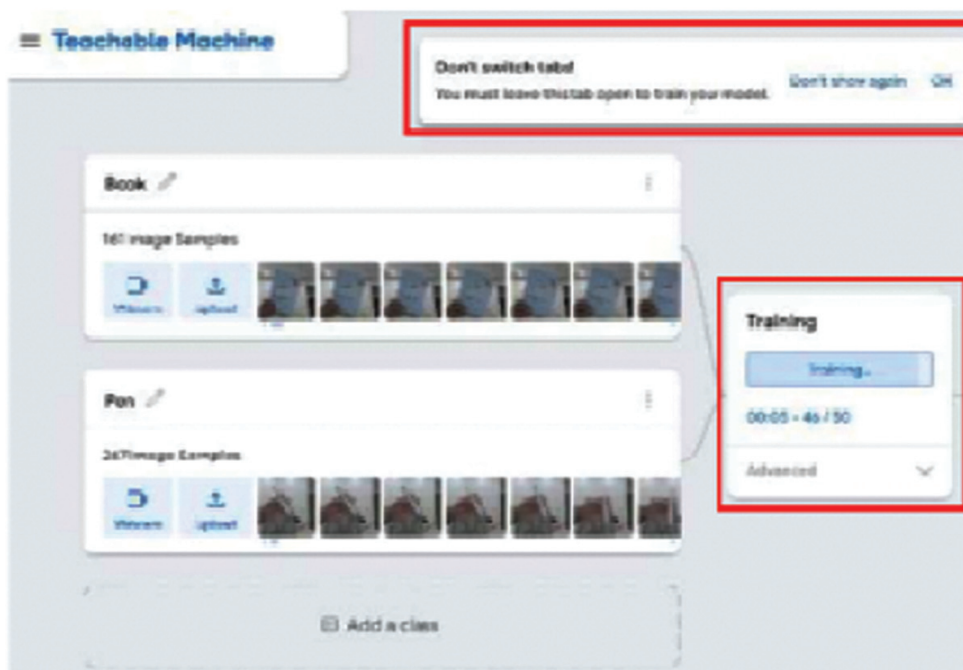
To improve the accuracy of the model:

- Capture images with different backgrounds.
- Record the object from both near and far distances.
- Use different lighting conditions and viewing angles.
- Avoid capturing the object in exactly the same position every time.

These variations help the model learn the important features of the object rather than memorizing specific images.

Step 4: Train the Model

1. After collecting images for all classes, click the **Train Model** button.
2. Wait while Teachable Machine processes the images and learns from the training data.



A progress bar will appear during training. Once the process is complete, the model will be ready for testing.



Notes

Step 5: Test the Model

1. Turn on the webcam in the **Preview** section.
2. Hold one of the objects used during training (for example, the pen) in front of the camera.
3. Observe the prediction displayed by the model.

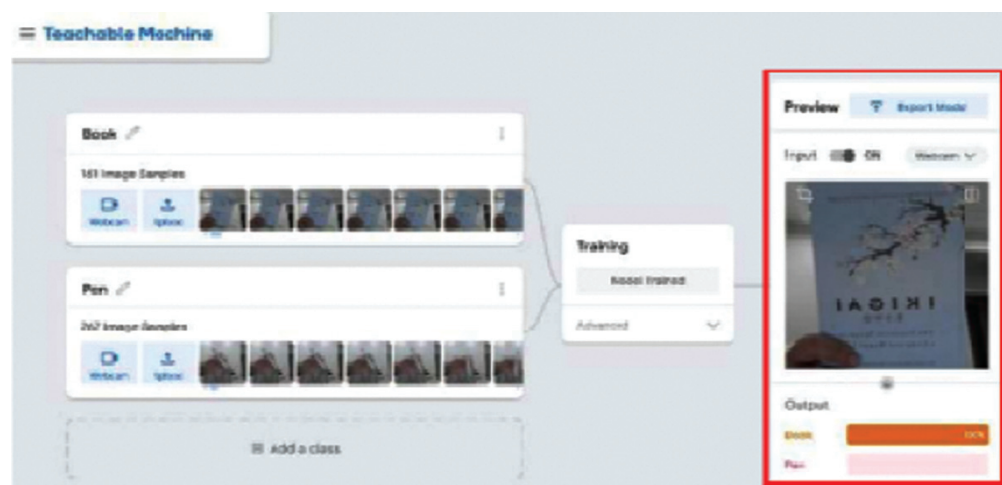
A sample prediction may appear as:

Pen – 98% Confidence

or

Book – 100% Confidence

4. Test the model using different angles, distances, and backgrounds to evaluate its performance.



This step helps students understand how Machine Learning models make predictions and how the quality and variety of training data influence accuracy.

Step 6: Improve Your Model (Optional)

If the model makes mistakes, don't worry. Machines improve with practice. You can:

- Add more images
- Add clearer examples
- Add some images with confusing backgrounds

- Retrain the model again

This helps the machine become more accurate.

LEARNER'S OBSERVATIONS

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Instructor's Signature



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Practical 6

EXPLORING INFINITE DRUM MACHINE EXPERIMENT OF GOOGLE

OBJECTIVE

After completing this practical, you will be able to:

- explain how unsupervised learning groups similar sounds together without any labels, by exploring Google's Infinite Drum Machine experiment.

REQUIREMENTS

- A laptop or desktop computer
- An internet connection
- A modern web browser

PROCEDURE/ACTIVITY:

Step 1: Open the Experiment

1. Open the following link in your web browser:

<https://experiments.withgoogle.com/ai/drum-machine/view/>

2. Click **Start Playing**.
3. A large interactive map containing thousands of coloured dots will appear.

Each dot represents a unique sound sample stored in the dataset.

Step 2: Understanding the Dataset

The Infinite Drum Machine contains **more than 6,000 sound samples** collected from different sources.



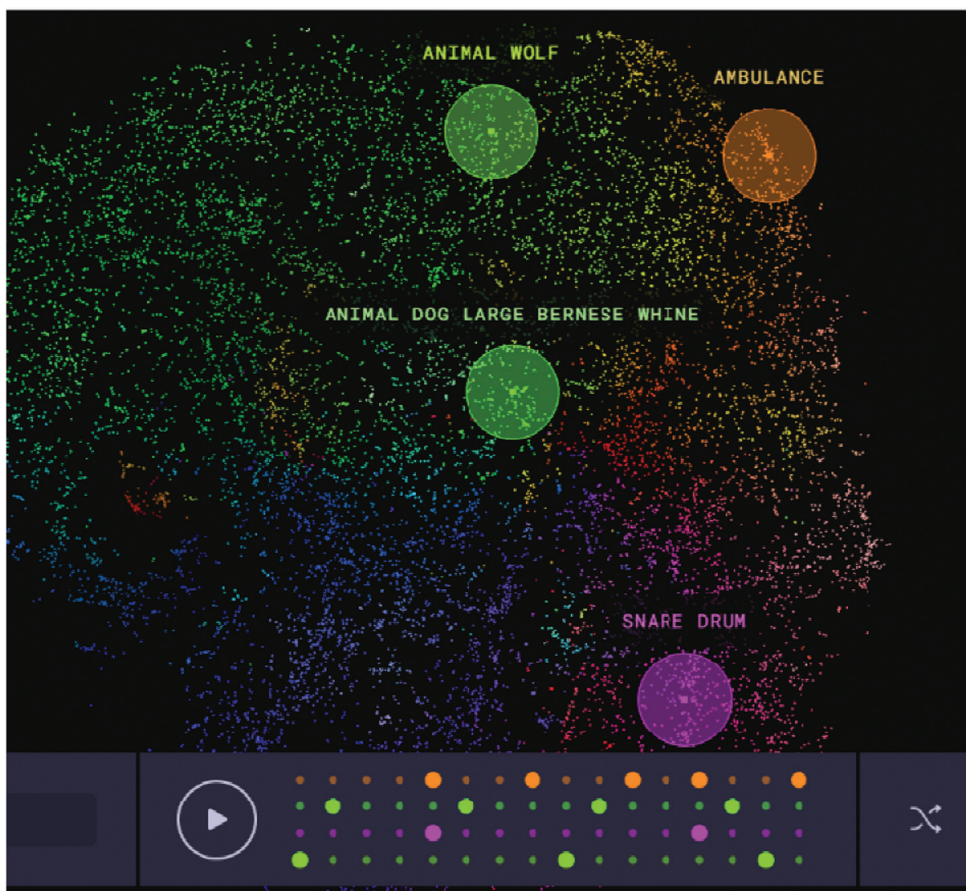
Examples include:

- Drums
- Claps
- Bells
- Tools
- Animal sounds
- Vehicle sounds

Every sound is represented as a dot on the screen. All dots together form the dataset.

Step 3: Observe the Clusters

1. See how all these dots have different colours and similar colour dots are grouped together.
2. Now, click on any dot on the map. You will hear a sound.



3. Notice:
 - Do dots placed close to each other sound similar?



Notes

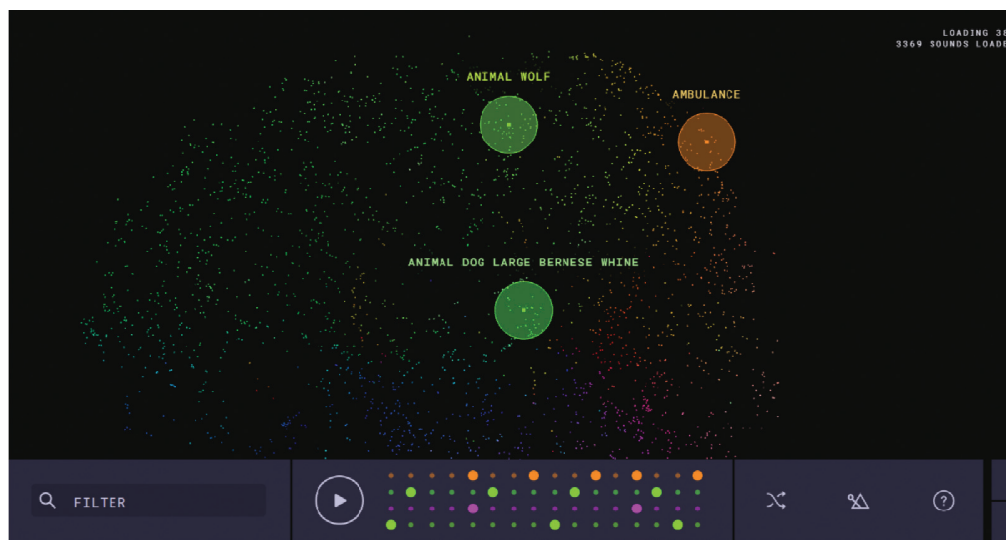
Practical Manual

- Do distant dots sound different?
 - Are some areas filled with loud, sharp sounds?
 - Are other areas filled with soft or smooth sounds?
4. What is happening?
- The AI system grouped sounds using a technique called
 - No one told the machine what the sound is—it learned t

This is **unsupervised learning in action**.

Step 4: Explore the Sound Map

1. Use your mouse or trackpad to zoom in and out
2. Drag the screen to explore different region



3. Observe:
- How some clusters have rhythmic beats
 - How other clusters have human-made noises (typing, tapping, clicking)
 - How nature sounds may be grouped in a different area

This helps students see how AI organises complex data by patterns.



Notes

Step 5: Create Your Own Beat!

1. At the bottom of the screen, you will see a drum sequencer.
2. Click a few dots to select sounds
3. Add them into the sequencer

Press Play and listen to what happens.

LEARNER'S OBSERVATIONS

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Practical 7

BUILDING A SENTIMENT ANALYSIS MODEL USING ORANGE DATA MINING, A VISUAL, DRAG-AND-DROP MACHINE LEARNING TOOL

OBJECTIVES

After completing this practical, you will be able to:

- define what **sentiment analysis** is (positive, negative, neutral sentiment).
- Import and preprocess text data in Orange.
- Use basic NLP widgets (Bag of Words, Preprocess Text).
- Build a simple **sentiment classification pipeline**.
- Evaluate a model's accuracy visually.
- Interpret the results in a real-world context.

PRE-REQUISITES

- Orange Data Mining (latest version)
- Enable *Text Mining* add-on
 - Open Orange → Add-ons → Install **Text Mining**
- A sample dataset (CSV)

Recommended Sample Dataset

Twitter Sentiment Dataset

- Columns: text, label
- Labels: positive / negative / neutral
- Very easy for students to understand.



IMDb Movie Reviews Dataset

- Columns: review, sentiment
- Labels: positive / negative
- Larger and great for binary classification.

PROCEDURE:

- Import a dataset containing text messages (such as tweets or reviews),
- Preprocess the text, convert it into numerical features,
- Train simple machine learning models (like Naive Bayes or Logistic Regression).
- Test the model's accuracy and observe how well it can classify text as **positive**, **negative**, or **neutral**.
- This activity helps students see how NLP works in real life, such as how apps detect hate speech, spam, or customer feedback sentiment

LEARNER'S OBSERVATIONS

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Practical 8

THE MORAL MACHINE

Self-driving cars must sometimes make split-second ethical decisions (e.g., swerve to hit a barrier and kill the passenger, or stay on course and hit a pedestrian).

OBJECTIVE

After completing this practical/ Activity, you will be able to:

- explore ethical AI

REQUIREMENT

- A computer with internet connection

Action:

1. Visit the MIT Moral Machine website.
2. Click “Start Judging.”
3. Go through at least 10 scenarios.
4. **Reflection:** At the end, look at your results. Did you favor saving more lives (Utilitarianism)? Did you favor saving the young over the old? Did you favor humans over pets?

Note: This exercise highlights that “ethics” varies by culture and individual. Programming a “universal” ethical AI is incredibly difficult.

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Practical 9

ROCK, PAPER, SCISSORS CLASSIFICATION

OBJECTIVE

Create an AI model that can referee a game of Rock-Paper-Scissors by recognizing hand gestures. Here you will simulate a professional workflow by using a **pre-existing dataset**.

PREREQUISITE

Download the dataset → **Dataset Link:** Rock-Paper-Scissors Images (Kaggle). Download the ZIP file and extract it. You will see folders named “rock,” “paper,” and “scissors.”

Step-by-Step Instructions:

1. **Open Teachable Machine:** Go to teachablemachine.withgoogle.com and click **Get Started** -> **Image Project** -> **Standard Image Model**.
2. **Create Class 1 (Rock):**
 - Rename “Class 1” to “Rock”.
 - Click **Upload** -> **Choose images from your files**.
 - Open the “rock” folder from your downloaded dataset, select about 20-50 images, and upload them.
3. **Create Class 2 (Paper):**
 - Rename “Class 2” to “Paper”.
 - Repeat the upload process using images from the “paper” folder.



4. Create Class 3 (Scissors):

- Click **Add a Class** at the bottom.
- Rename it to “Scissors” and upload images from the “scissors” folder.

5. Train: Click the **Train Model** button. Wait for the “Preparing training data...” bar to finish. (Do not switch tabs!)

6. Test:

- Once trained, the “Preview” panel on the right will turn on your webcam.
- Hold your own hand up to the camera in a “Rock” shape.
- Does the bar for “Rock” go up to 100%? Try “Paper” and “Scissors.”

Challenge: If you tilt your hand or move it far away, does the model get confused? This helps you understand the limitations of your training data.

LEARNER’S OBSERVATIONS

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Practical 10

THE “ETHICAL EDITOR” CHALLENGE

OBJECTIVE

After completing this practical, you will be able to:

- Identify bias and errors in AI outputs and practice the “Human-in-the-Loop” concept.

REQUIREMENT

ChatGPT or Microsoft Copilot

PROCEDURE/ACTIVITY

Steps:

1. **Generate:** Ask the AI to “Write a short story about a doctor and a nurse fighting a virus.”
2. **Analyze:** Read the story. Did the AI automatically make the doctor a man and the nurse a woman? (This is a common gender bias).
3. **Refine (The Human Loop):** Rewrite the prompt to fix this: “*Write a story about a female doctor and a male nurse...*”

LEARNER’S OBSERVATIONS

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Practical 11

THE “MEMORY TEST” (UNDERSTANDING CONTEXT)

OBJECTIVE

After completing this practical, you will be able to:

- to demonstrate how an LLM remembers previous inputs in a conversation.

REQUIREMENT

- A computer with internet connection
- Tools like ChatGPT or Microsoft Copilot

PROCEDURE

1. Open the AI tool.
2. **Type this prompt:** “Who is the fastest man in the world?”
 - *Observation:* The AI should answer “Usain Bolt.”
3. **Type this follow-up:** “What is his world record?”
 - *Note:* Do **not** type the name “Usain Bolt” again.
 - *Observation:* The AI understands that “his” refers to Usain Bolt because it remembers the context of the chat.
4. **Type this variation:** “Write a poem about him.”
 - *Observation:* The AI writes a poem specifically about Usain Bolt.

LEARNER'S OBSERVATIONS

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Practical 12

PROMPT ENGINEERING (THE “BAD VS. GOOD” EXPERIMENT)

OBJECTIVE

After completing this practical, you will be able to:

- observe how specific instructions (Role, Task, Context) improve AI output.

REQUIREMENT

- A computer with internet connection
- Tools like ChatGPT or Microsoft Copilot

PROCEDURE

1. **Step 1 (The Bad Prompt):** Type the following:
 - “Write a letter.”
 - *Observation:* The AI will ask “To whom?” or write a generic, useless letter.
2. **Step 2 (The Good Prompt):** Type the following detailed prompt:
 - “Act as a **Sports Captain (Role)**. Write a motivational letter to your **team (Context)** before the **final football match (Task)**. Keep the tone energetic.”
 - *Observation:* The AI generates a specific, exciting letter ready to be used.
3. **Step 3 (Variation):** Try changing the **Role** to “A Strict Coach.” See how the tone changes.

LEARNER'S OBSERVATIONS

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Practical 13

THE DIGITAL ART STUDIO (TEXT-TO-IMAGE)

OBJECTIVE

After completing this practical, you will be able to:

- create original images using descriptive adjectives.

REQUIREMENT

- A computer with internet connection
- Tools like ChatGPT or Microsoft Copilot

PROCEDURE

1. Open the image creation tool.
2. **Type Prompt A:** “A cat.”
 - *Observation:* You get a standard, realistic photo of a cat.
3. **Type Prompt B (Adding Detail):** “A cute astronaut cat wearing a red spacesuit, standing on the moon, digital art style.”
 - *Observation:* The AI adds the specific elements you asked for (Space, Red Suit, Moon).
4. **Type Prompt C (Changing Style):** Use the same prompt but change “digital art style” to “pencil sketch style.”
 - *Observation:* The content remains the same, but the artistic look changes completely.

LEARNER'S OBSERVATIONS

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Practical 14

EXPLORING AI MODELS ON HUGGING FACE

The AI Music Critic (Audio Analysis)

- **Link:**<https://huggingface.co/spaces/nvidia/music-flamingo>
- **Concept:** Unlike tools that *create* music, this AI *listens* to music. It can identify instruments, genres, and moods from an audio file, acting like a digital music critic.

OBJECTIVES

After completing this practical, you will be able to

- explore AI Models on Hugging Face

REQUIREMENTS

- an audio file (MP3/WAV)
- A computer with internet connection

PROCEDURE

1. **Navigate:** Go to the link provided.
2. **Provide Audio (Choose one method):**
 - **Option A (Upload):** Click “Click to Upload” or drag an audio file (MP3/WAV) into the “Audio Input” box.
 - **Option B (YouTube):** Paste a YouTube link of a song into the “YouTube URL” box and click the “Load Audio” button.



- **Option C (Record):** Click the **Microphone** icon to record yourself singing or humming a tune.
3. **Enter Prompt:** Look at the **Prompt** text box. You can use the default question: *“Describe this track in full detail...”* or type your own question like: *“What instruments are playing?”* or *“Is this song happy or sad?”*
 4. **Run:** Click the **Submit** or **Chat** button.
 5. **Observation:** Look at the **“Model Response”** box on the right.
 - Did the AI correctly identify the **Genre** (e.g., Rock, Pop, Classical)?
 - Did it list the correct **Instruments** (e.g., Drums, Guitar, Piano)?

Does the description of the **Mood** match what you feel when listening?

LEARNER’S OBSERVATIONS

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Instructor’s Signature



Practical 15

RUN AN AI MODEL IN GOOGLE COLAB

OBJECTIVE

After completing this practical, you will be able to:

- run an AI Model in Google Colab

REQUIREMENT

- Tools like Google Teachable Machine and Google Colab
- A computer with internet connection

PROCEDURE

1. Train your Model: Go to Google Teachable Machine (teachablemachine.withgoogle.com), create an Image Project, and train a simple model (e.g., distinguishing between a Pen and a Key).
2. Export the Model: Once trained, click “Export Model.” Choose the TensorFlow (Keras) tab, and download the .zip file. Unzip it on your computer.
3. Open Google Colab: Go to colab.research.google.com and create a “New Notebook”.
4. Upload your Files: On the left menu in Colab, click the Folder icon. Upload the keras_model.h5 file, the labels.txt file, and a sample photo you want to test (rename the photo to test_image.jpg).
5. Paste and Run the Code: Paste the Python code provided below into the first Colab cell. Click the Play button (or press Shift+Enter) to run it.

6. Observe the Output: The code will load your custom model, analyze the pixels of your test image, and print the predicted object alongside its confidence score.

LEARNER'S OBSERVATIONS

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Practical 16

EXPERIENCE A TRAINED CNN

OBJECTIVE

After completing this practical, you will be able to:

- explore how a professional AI model classifies images, detects objects, and calculates confidence scores.

REQUIREMENTS

- Tool like **Google Cloud Vision API**.

PROCEDURE

1. **Navigate:** Open your web browser and visit <https://cloud.google.com/vision/>.
2. **Locate:** Scroll down to the section titled “**Try the API**”.
3. **Upload:** Drag and drop an image from your computer (try a photo with multiple objects, like a pet in a park or a bowl of fruit) or select one of the sample images provided.
4. **Analyze the Results:**
 - **Labels Tab:** Look at the list of words. You will see a percentage next to each word (e.g., *Dog: 98%*, *Grass: 95%*). This percentage is the **Probability Score** calculated by the CNN’s final layer.
 - **Objects Tab:** Click on this tab. The AI will draw **Bounding Boxes** around the specific items it recognizes. This demonstrates **Object Detection**.
 - **Properties Tab:** This shows the dominant colors in the image (RGB values), which corresponds to the pixel data the computer actually “sees.”

LEARNER'S OBSERVATIONS

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Practical 17

BUILDING A “SMART SORTER” WITH LOBE

OBJECTIVE

After completing this practical, you will be able to:

- create and train a custom Image Classifier that can distinguish between two different objects.

REQUIREMENTS

- **Lobe** (A free, easy-to-use app by Microsoft that runs on your computer).

Scenario: Imagine you are building a robot that needs to sort items. We will teach it to recognize the difference between a **Pen** and a **Key** (or any two objects you have).

Procedure:

Step 1: Setup

1. Download and open the **Lobe** application on your computer.
2. Click on “**New Project**”.

Step 2: Create Your Labels

1. On the top right, you will see a “Label” field. Type “**Pen**” (or your first object name).
2. This creates a “bucket” for your first category.

Step 3: Collect Data (The Most Important Part!)

1. Click on **Import** and select **Camera**.



2. Hold a pen in front of your webcam.
3. **Burst Capture:** Press and hold the circular button to take many photos quickly.
4. **Move it around:** While holding the button, tilt the pen, move it closer and further, and change the angle.
 - *Goal:* Capture at least **20-30 images**.
 - *Why?* This creates “Data Diversity,” teaching the AI what a pen looks like in different positions.

Step 4: Teach the Second Category

1. Type a new label: **“Keys”** (or your second object).
2. Hold your keys in front of the camera.
3. Repeat the process: Hold the button and move the keys around to capture 20-30 images.

Step 5: Train and Test

1. Lobe will automatically start “Training” (you will see a progress bar).
2. Once it says **“100% Correct”** or **“Ready”**, click on the **Play** (View) tab.
3. **The Test:** Hold the Pen in front of the camera. Does the label turn Green and say “Pen”?
4. Now switch to the Keys. Does it change to “Keys”?

LEARNER’S OBSERVATIONS

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Practical 18

THE AI SECURITY GUARD (FACE DETECTION) (OPTIONAL, SINCE THIS NEEDS FAIR AMOUNT OF CODE)

OBJECTIVE

After completing this practical, you will be able to:

- use a pre-trained OpenVINO model to detect human faces in real-time video.

REQUIREMENT

- Jupyter Notebook, OpenVINO Toolkit, Webcam.

PROCEDURE

1. **Launch:** Open your Jupyter Notebook environment as instructed in the lab session.
2. **Load the Model:** Execute the code block to load the **Face Detection** model. This model has already been trained to recognize the shape and features of a human face.
3. **Start Inference:** Run the code to activate your webcam. The system will now start “looking” for faces frame-by-frame.
4. **Distance Test (Level 2):**
 - Stand approximately **2 meters** away from the camera.
 - *Observation:* The system should draw a **Red Bounding Box** around your face.



Notes

5. Proximity Test (Level 3):

- Move closer to the camera (less than 1 meter).
- *Observation:* The code is programmed to change the box color to **Blue** when the face is large (close up).

LEARNER'S OBSERVATIONS

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