

Grade 6

Manual: 1

Project: AI Project: Emotion Detector

Theory

An emotion detector is an AI system that identifies human emotions from facial expressions. It can detect emotions like happy, sad, or surprised.

Theory – 2 (Electronics Concept)

Artificial Intelligence uses image recognition to analyze faces. The system is trained using images and then it predicts emotions. This process is called machine learning.

Aim / Objective

To create an AI model that detects human emotions.

Components Required

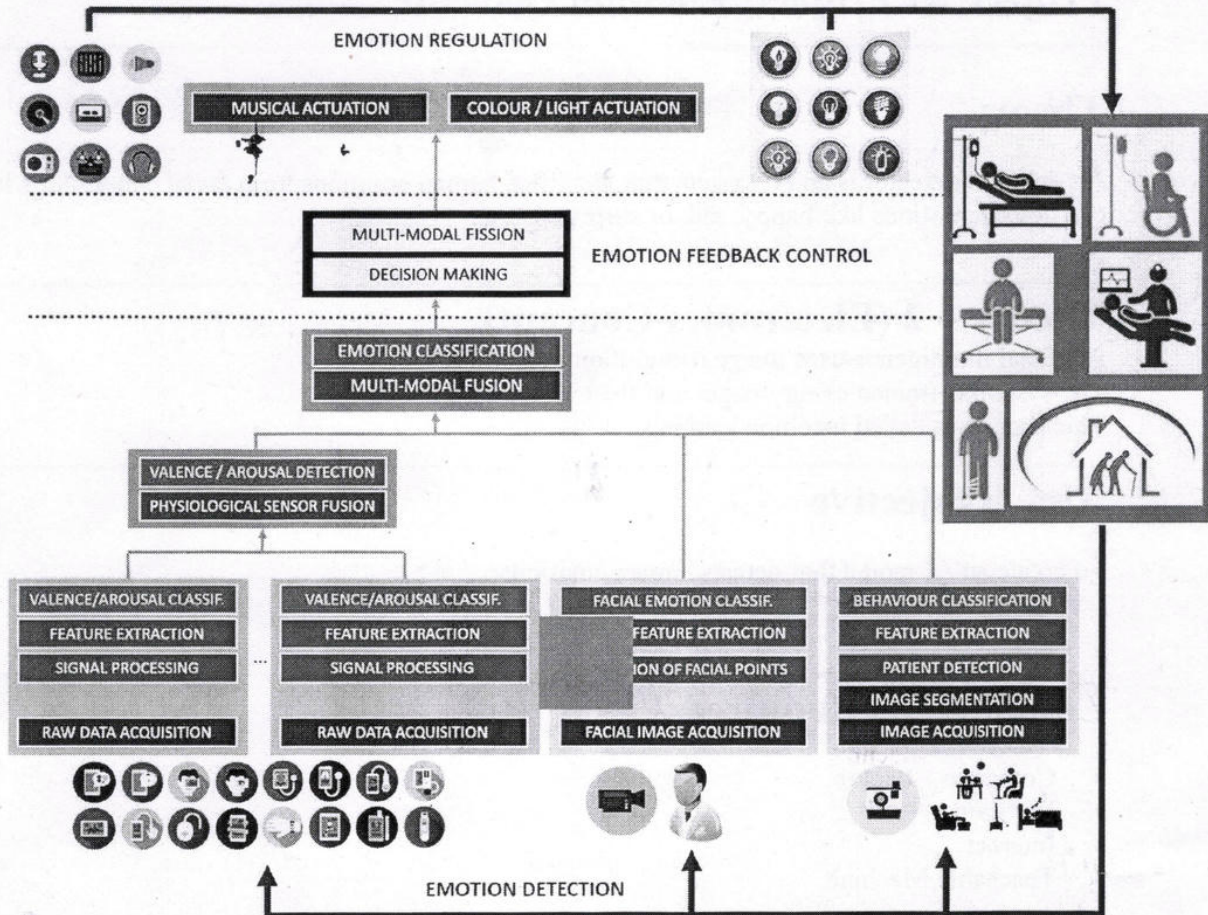
- Computer / Laptop
 - Webcam
 - Internet
 - Teachable Machine
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Procedure

- Open Teachable Machine.
 - Select image project.
 - Add different emotion classes.
 - Capture images using webcam.
 - Train the model.
 - Test the model.
-

Working Principle

The camera captures images.
AI model compares them with trained data.
It predicts the emotion based on patterns.



Result

The system detects and displays emotions correctly.

System Concept

- **Input:** Image (face)
- **Process:** AI model processing
- **Output:** Emotion detected

Section A: Multiple Choice Questions

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Manual: 2

Project: AI Project: Smart Recycling Sorter

Theory

A smart recycling sorter identifies waste types like plastic or paper. It helps in proper waste management.

Theory – 2 (Electronics Concept)

AI uses image recognition to classify objects. The model is trained with different waste images.

Aim / Objective

To build an AI system that classifies waste materials.

Components Required

- Computer
 - Webcam
 - Teachable Machine
-

Procedure

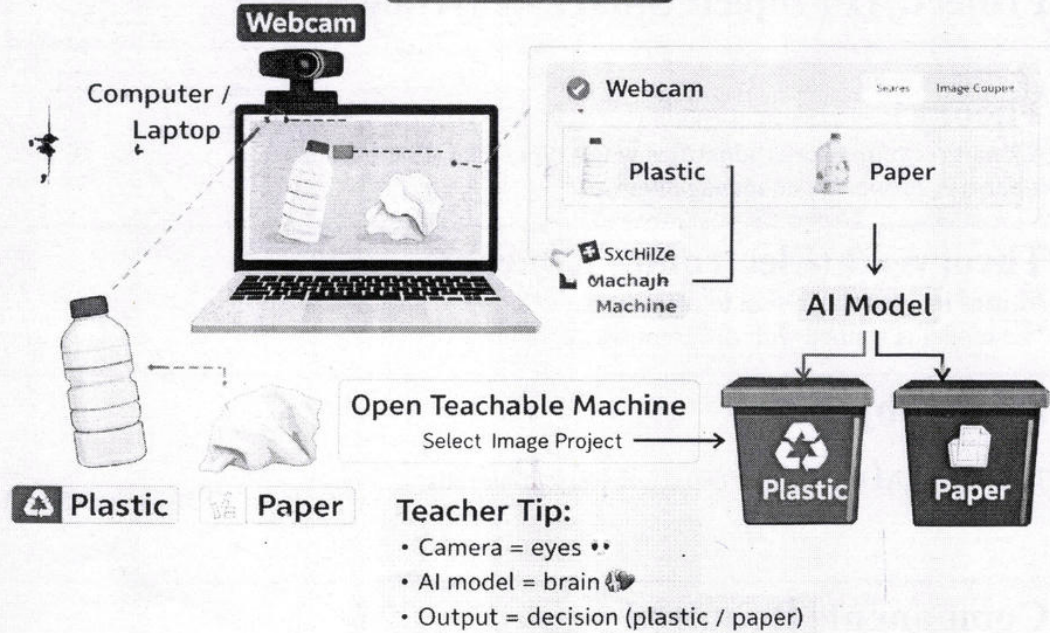
- Open AI tool.
 - Create classes (plastic, paper).
 - Capture images.
 - Train model.
 - Test classification.
-

Working Principle

Camera captures object image.
AI compares with trained data.
It classifies the object.

Smart Recycling Sorter (AI)

Class 6 – Manual 2



Result

System identifies waste type correctly.

System Concept

- **Input:** Image
- **Process:** AI classification
- **Output:** Waste type

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Manual: 3

Project: Temperature Monitor

Theory

A temperature monitoring system measures temperature and displays it. It is used in weather systems, smart homes, and industries.

Theory – 2 (Electronics Concept)

Internet of Things (IoT) connects devices through the internet. Sensors collect data from the environment and send it to a microcontroller for processing.

Aim / Objective

To measure temperature using a sensor and display the output.

Components Required

- Arduino / ESP8266
 - Temperature Sensor (LM35 / DHT11)
 - Breadboard
 - Jumper Wires
 - USB Cable
-

Procedure

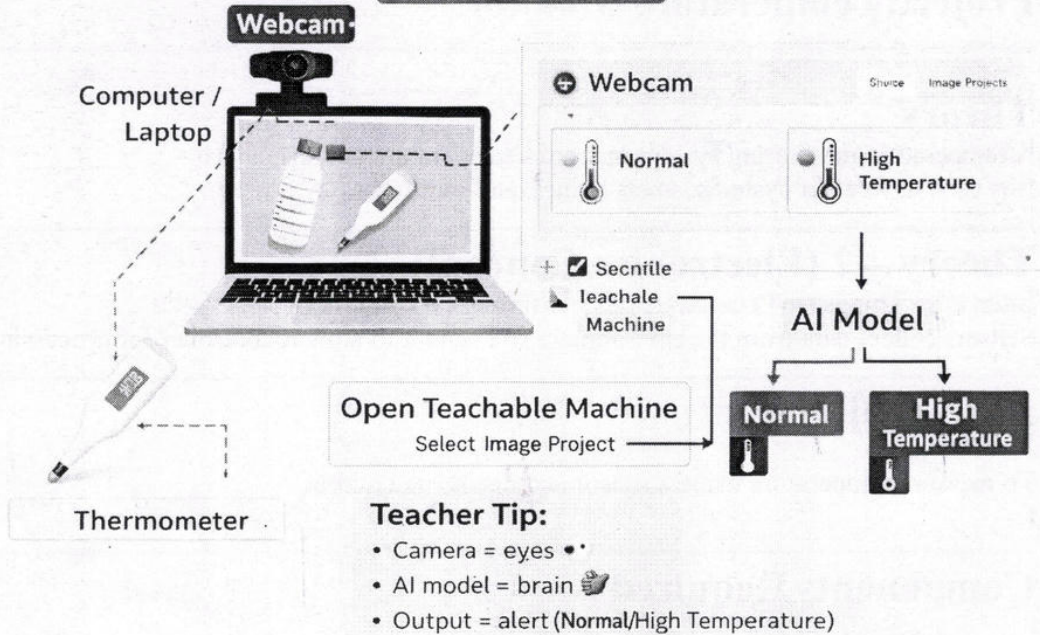
- Connect temperature sensor to Arduino
 - Upload the program
 - Read temperature data
 - Display output on screen
-

Working Principle

Sensor detects temperature → Arduino processes → Output displayed

AI Temp. Monitor

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Result

Temperature is measured and displayed correctly

System Concept

- **Input:** Temperature
- **Process:** Microcontroller
- **Output:** Display

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Manual: 4

Project: Smart Dustbin Alert

Theory

A smart dustbin alert system detects when the dustbin is full and gives an alert. It helps maintain cleanliness and improves waste management.

Theory – 2 (Electronics Concept)

IoT systems use sensors and microcontrollers to monitor real-world conditions.

An ultrasonic sensor measures the distance of garbage level, and when it reaches a limit, an alert is generated.

Aim / Objective

To create a smart dustbin system that alerts when it is full.

Components Required

- Arduino / ESP8266
 - Ultrasonic Sensor (HC-SR04)
 - LED / Buzzer
 - Breadboard
 - Jumper Wires
-

Procedure

- Connect ultrasonic sensor to Arduino
 - Connect LED or buzzer
 - Upload the program
 - Place objects in front of sensor
 - Observe alert
-

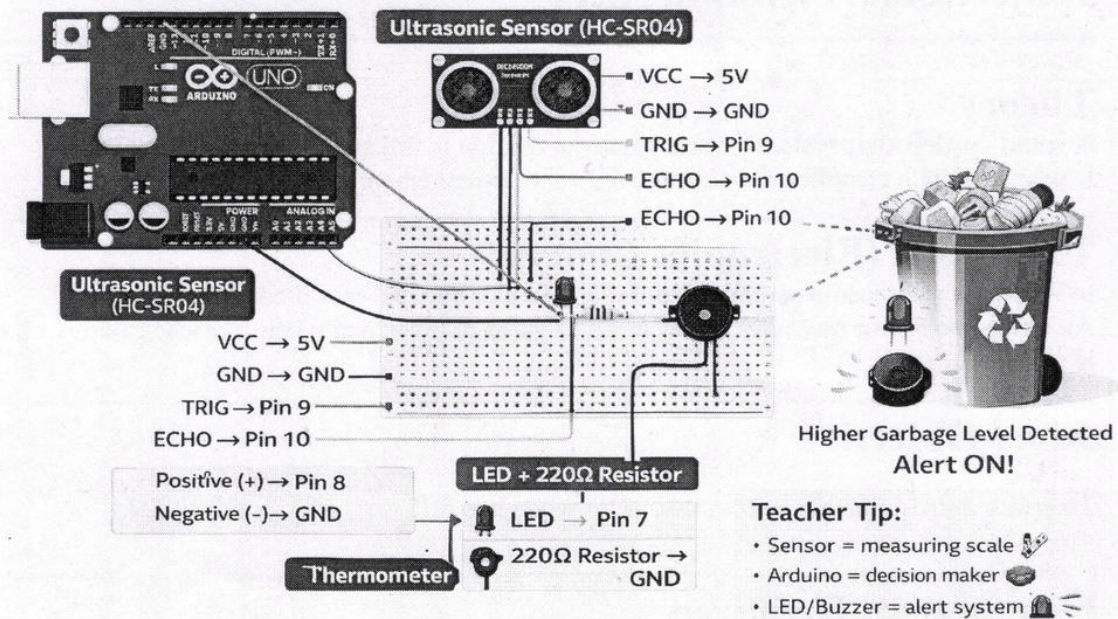
Working Principle

Sensor measures distance → Arduino processes → Alert generated when full

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Smart Dustbin Alert

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Result

System gives alert when dustbin is full

System Concept

- Input: Distance (garbage level)
- Process: Arduino processing
- Output: LED/Buzzer alert