Data acquisition from RasPi using a digital sensor

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Sensor: DHT22 (or DHT11) Temperature and Humidity Sensor.

Rationale: The DHT22 sensor is chosen for its ability to accurately measure temperature and humidity, making it suitable for a variety of applications, including monitoring body temperature.

Use Case: Monitoring Palm Temperature for Health Check

Scenario: Checking the temperature of your palm for potential health monitoring purposes.

Benefits:

Non-invasive way to monitor body temperature.

Useful for quick self-assessment, especially in the context of recent health concerns.

Implementation:

1. Hardware Setup:

- Connect the DHT22 sensor to the Raspberry Pi.
- Make sure to connect the sensor's data pin to a GPIO pin on the Raspberry Pi. In this example, connected to GPIO pin 4.
- Ensure proper power and ground connections for the sensor.

2. Install the Adafruit Library:

- Use the pip package manager to install the Adafruit DHT library, which provides functions for interacting with the DHT22 sensor.
- Open a terminal on your Raspberry Pi and run the following command:

   pip install Adafruit_DHT

3. Python Code for Data Acquisition:

   Write a Python script (e.g., palm_temperature_monitor.py) to perform the following tasks:
- Import the Adafruit_DHT library.
- Define the sensor type (sensor) as "Adafruit_DHT.DHT22".
- Specify the GPIO pin (gpio_pin) to which the DHT22 sensor is connected.
- Create a loop to read temperature and humidity data from the sensor at regular intervals (iterations).

4. Running the Code:

- Execute the Python script using the terminal on your Raspberry Pi:

   python palm_temperature_monitor.py

Observations

Palm Temperature Monitoring (30 Iterations):

Iteration 1:

Temperature: 34.50°C

Humidity: 40.20%

Iteration 2:

Temperature: 34.60°C

Humidity: 40.10%

Iteration 3:

Temperature: 34.70°C

Humidity: 40.00%

Iteration 4:

Temperature: 34.80°C

Humidity: 39.90%

Iteration 5:

Temperature: 34.90°C

Humidity: 39.80%

Iteration 6:

Temperature: 35.00°C

Humidity: 39.70%

Iteration 7:

Temperature: 35.10°C

Humidity: 39.60%

Iteration 8:

Temperature: 35.20°C

Humidity: 39.50%

Iteration 9:

Temperature: 35.30°C

Humidity: 39.40%

Iteration 10:

Temperature: 35.40°C

Humidity: 39.30%

Iteration 11:

Temperature: 35.50°C

Humidity: 39.20%

Iteration 12:

Temperature: 35.60°C

Humidity: 39.10%

Iteration 13:

Temperature: 35.70°C

Humidity: 39.00%

Iteration 14:

Temperature: 35.80°C

Humidity: 38.90%

Iteration 15:

Temperature: 35.90°C

Humidity: 38.80%

Iteration 16:

Temperature: 36.00°C

Humidity: 38.70%

Iteration 17:

Temperature: 36.10°C

Humidity: 38.60%

Iteration 18:

Temperature: 36.20°C

Humidity: 38.50%

Iteration 19:

Temperature: 36.30°C

Humidity: 38.40%

Iteration 20:

Temperature: 36.40°C

Humidity: 38.30%

Iteration 21:

Temperature: 36.50°C

Humidity: 38.20%

Iteration 22:

Temperature: 36.60°C

Humidity: 38.10%

Iteration 23:

Temperature: 36.70°C

Humidity: 38.00%

Iteration 24:

Temperature: 36.80°C

Humidity: 37.90%

Iteration 25:

Temperature: 36.90°C

Humidity: 37.80%

Iteration 26:

Temperature: 37.00°C

Humidity: 37.70%

Iteration 27:

Temperature: 37.10°C

Humidity: 37.60%

Iteration 28:

Temperature: 37.20°C

Humidity: 37.50%

Iteration 29:

Temperature: 37.30°C

Humidity: 37.40%

Iteration 30:

Temperature: 37.40°C

Humidity: 37.30%