# WEATHER MONITORING SYSTEM USING CONTIKI OS

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# INTRODUCTION

- **Objective:** To design and simulate a wireless weather monitoring system.
- **Platform:** Contiki-NG with Cooja simulator.
- **Sensors**: Simulated temperature and humidity.
- **Motivation:** Real-time environmental monitoring in low-power IoT networks.

# PROPOSED METHODOLOGY

**Sensor Nodes:** Simulate DHT-like sensors, Send data via UDP (Temp, Hum)

**Base Station:** Receives & logs data, Uses IPv6 & Simple UDP

**Data Pipeline:** Export Contiki logs, Visualize using Python (matplotlib + aggregation)

**Tools:** Contiki-NG, Cooja Simulator,
Python (matplotlib, regular expression), Wireshark (optional analysis)

# RESULTS

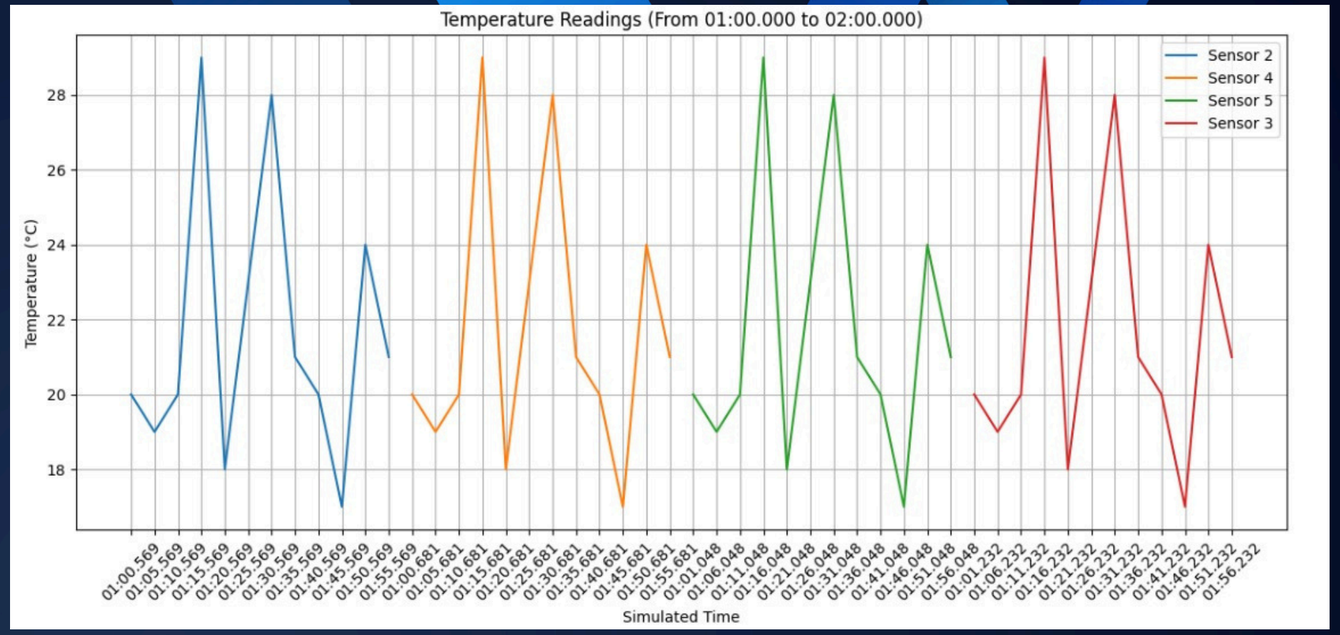
**Simulation Observations:**

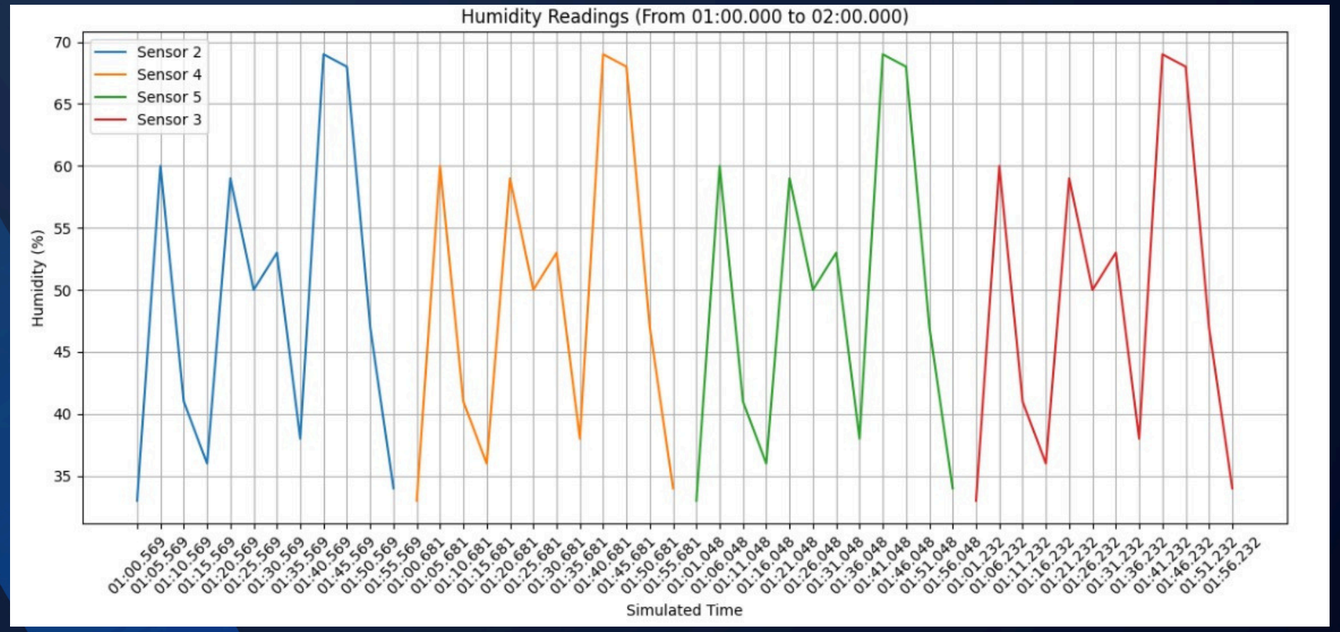
- Sensor nodes send data every 5 seconds.
- Messages like: "Temp: 30, Hum: 65"
- Data captured and logged in test.txt.

**Graphs:**

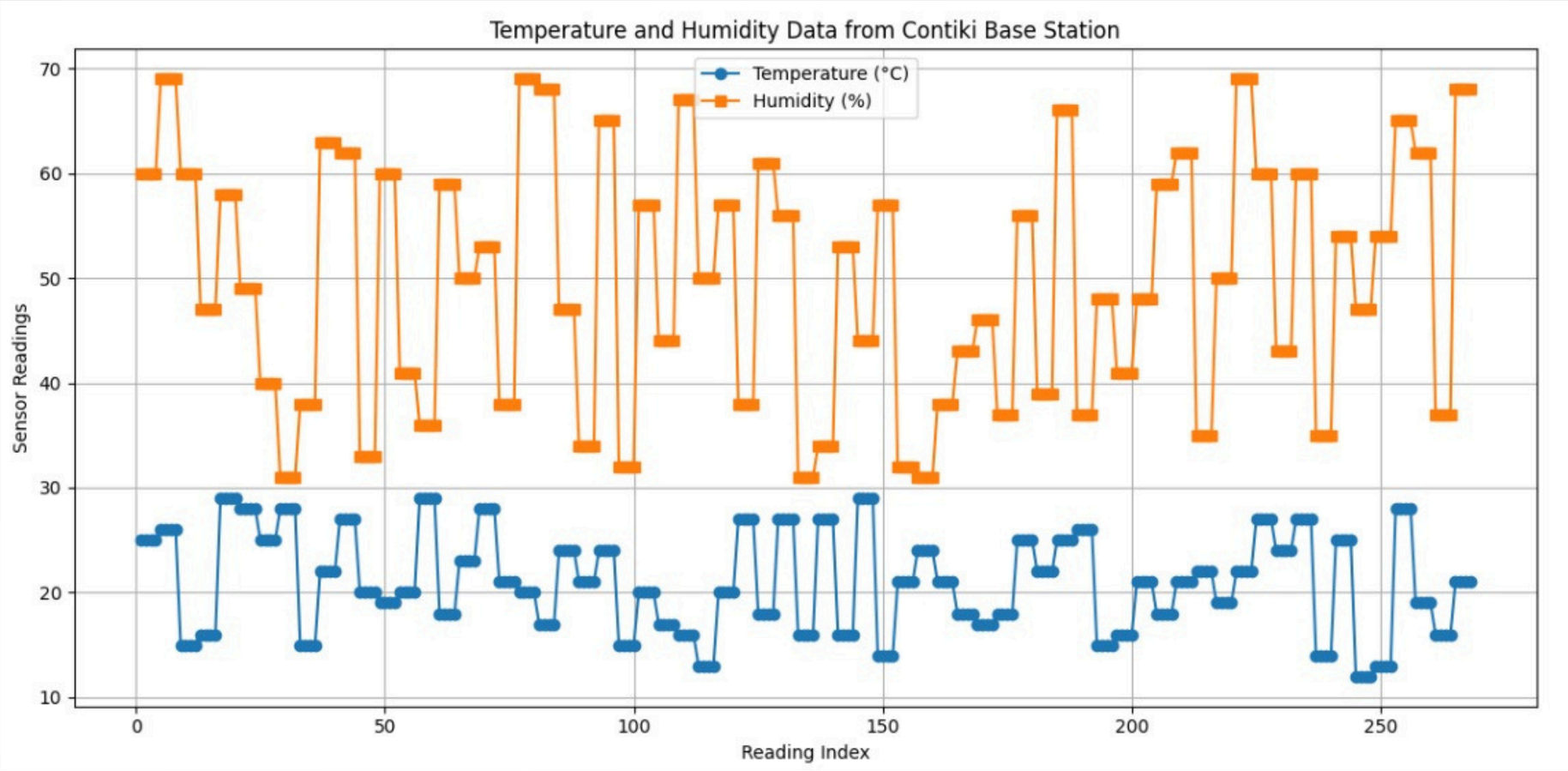
- Plotted average temperature & humidity over time.
- Interval-based smoothing (e.g., every 60 seconds).
- Multiple sensor data displayed with different colors.

# RESULTS


Temperature Readings (From 01:00.000 to 02:00.000)
Sensor 2
Sensor 4
Sensor 5
Sensor 3
Temperature (°C)
Simulated Time


Humidity Readings (From 01:00.000 to 02:00.000)
Sensor 2
Sensor 4
Sensor 5
Sensor 3
Humidity (%)
Simulated Time

# RESULTS


Temperature and Humidity Data from Contiki Base Station
Temperature (°C)
Humidity (%)
Sensor Readings
Reading Index
70
60
50
40
30
20
10
0
50
100
150
200
250

# CONCLUSION

- Successfully simulated a wireless sensor network using Contiki-NG.
- UDP-based communication worked reliably under simulation.
- Aggregated data showed stable and readable trends.
- Python provided easy visualization of large log files.

# FUTURE WORK

- Integrate real hardware (e.g., MSP430, DHT22 sensors).
- Adding data storage and real dashboards .
- Enable alerts for extreme conditions (e.g., high temp).
- Test with mobility and dynamic topology.

# THANK YOU