

CIRCUIT_BREAKERS

SMART FOREST FIRE DETECTION SYSTEM

Category 1: Electronics

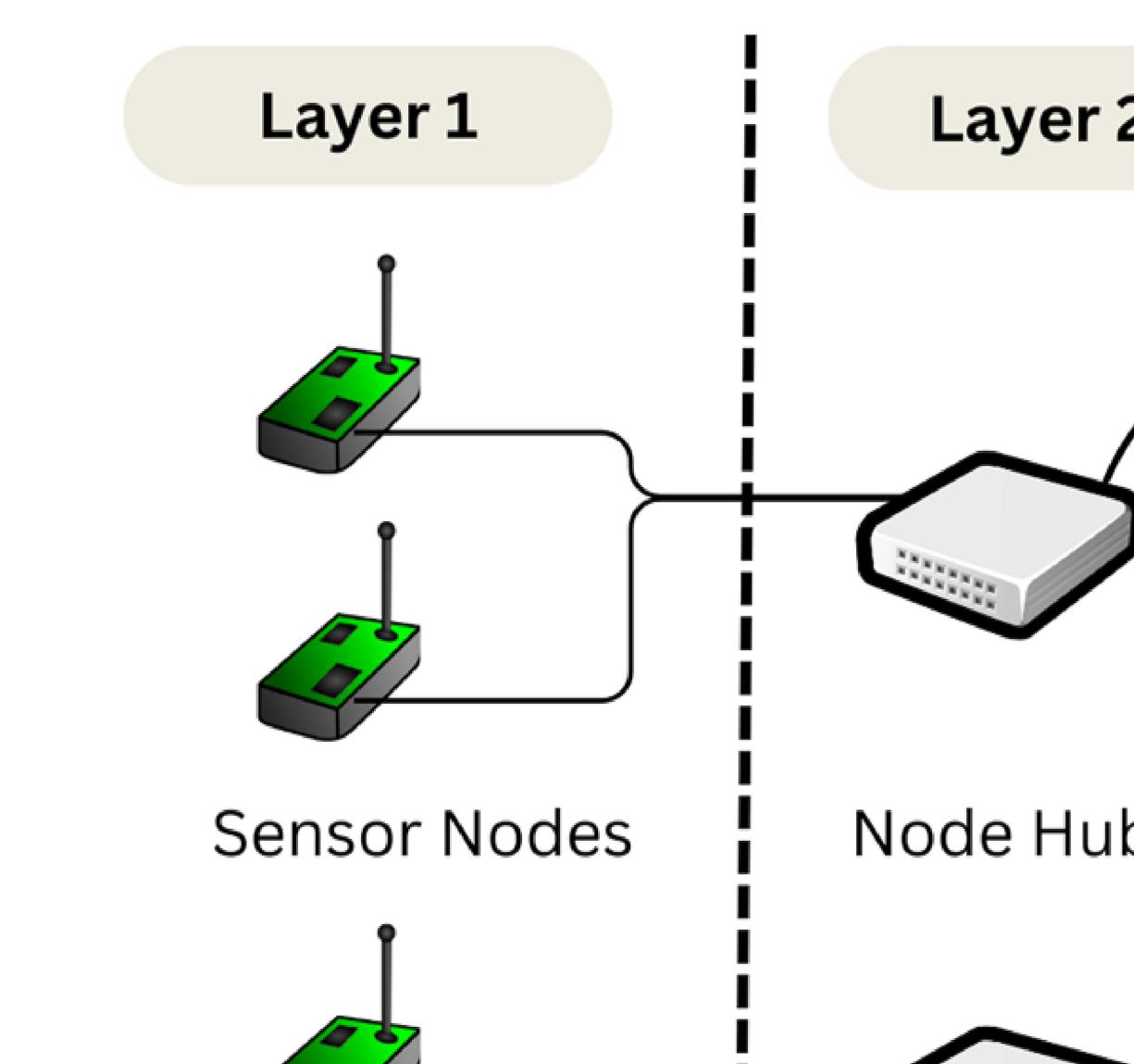
Abstract

The proposed solution for the forest fire detector project using HC-12, cellular network, sensors, GSM module, and GPRS module is aimed at detecting forest fires in their early stages to help prevent or minimize the damages they cause.

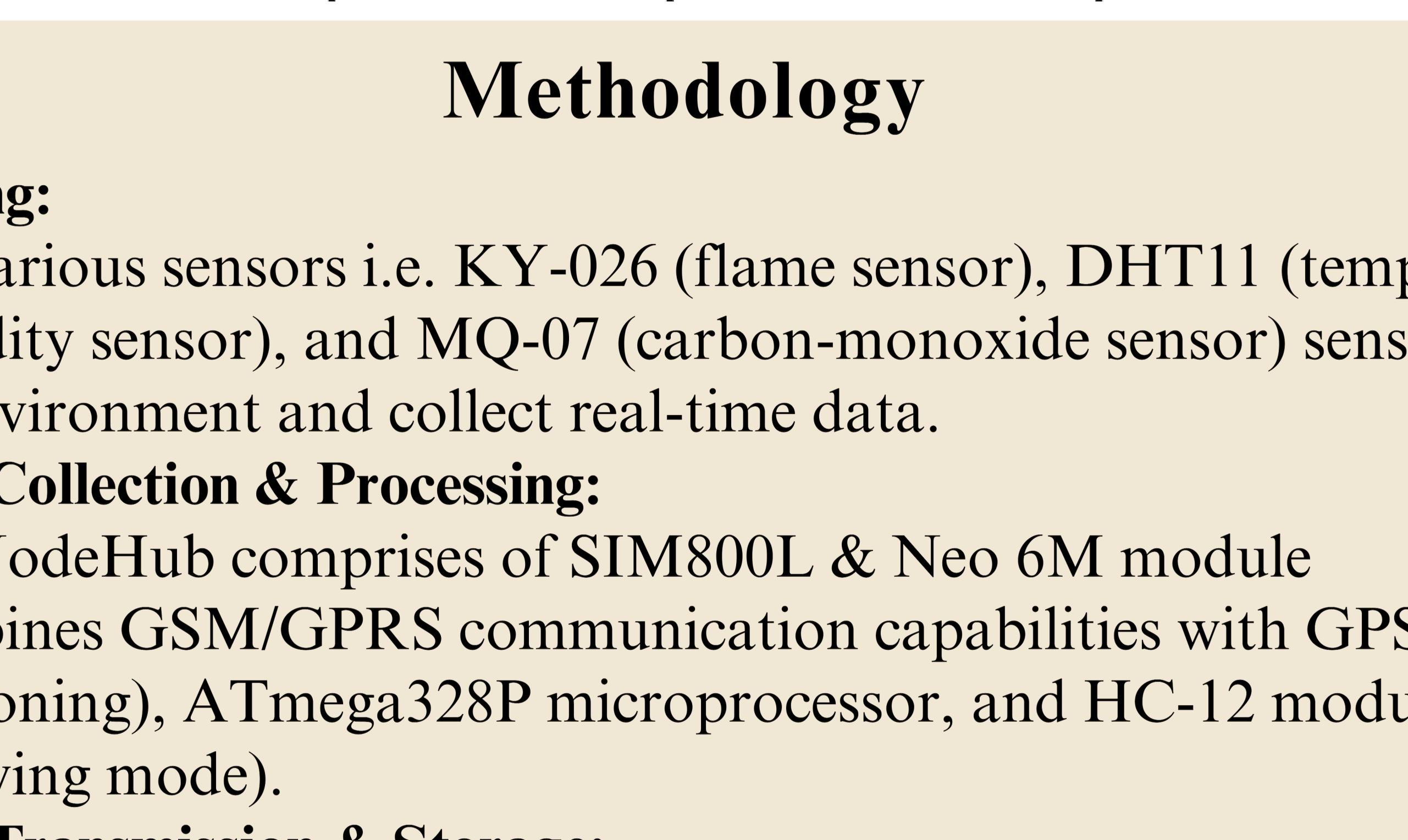


Future Prospects

1. Implementation of ML model.
2. Integration of Remote Sensing.
3. Integration with Geographic Information Systems (GIS)



Architecture



Methodology

Sensing:

The various sensors i.e. KY-026 (flame sensor), DHT11 (temp. & humidity sensor), and MQ-07 (carbon-monoxide sensor) sense the environment and collect real-time data.

Data Collection & Processing:

The NodeHub comprises of SIM800L & Neo 6M module (combines GSM/GPRS communication capabilities with GPS positioning), ATmega328P microprocessor, and HC-12 module (receiving mode).

Data Transmission & Storage:

The processed data and coordinates are transmitted using the GPRS capabilities of the Node Hub to Google's Firebase platform, real-time data can be used to store and synchronize sensor data in real-time.

Mobile App & Web:

The Firebase integration allows the development of mobile apps that can access real-time sensor data, receive push notifications, and provide a user-friendly interface for monitoring the forest fire detection system on mobile devices of the forest officers and authorities.



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