IAS Project Documentation

COMMUNICATION MODULE
&
SENSOR MANAGER

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Introduction

Communication module is the core part of the IOT platform. It acts as the central module between deployment manager and sensor manager which will help in binding the streaming sensor data with active algorithms(running instances).

We are planning to build the communication module using stream - processing framework Kafka. Kafka server will be used for all communication within modules (example sensor manager to repository or Node etc.). The Information Model for Communication system will be based on input and output APIs.

Scope

Our platform provides various microservices which will facilitate application development. Communication module will provide useful APIs to integrate independent applications on it. All the communication is done by kafka and the sensor will produce the data on the message queue.

Intended Use

Deployer communicates with the sensor manager using Kafka for assigning appropriate sensor node for data binding between algorithm and the sensor data. The sensor manager passes the topic name to the nodes for communication to the Deployer using the communication module (kafka).

Assumptions and Dependencies

1. Python3 preferable
2. Sensors are ON all the time
3. All required libraries/modules pre-installed
4. Linux system preferable

Technology Used

- Kafka for queuing data stream to the model
- Python Framework
- Interaction with MongoDB by handling JSON file.
- Bash shell scripts
- Sensor simulator

Interaction with other module

- Deployer communicates with the sensor manager using Kafka for assigning appropriate sensor node
- Using the Communication module the deployer communicates with the load balancer for assigning server node.
- Admin of the infrastructure can use user interface for sensor registration.

Test Cases

1: For communication module

- Handling simultaneous multiple module calls
- Processing different types of sensor data
- Dynamic load handling

2: For sensor module

- Simulating sensors
- Filtering sensor ids
- Controlling sensor data rate

Block diagram:

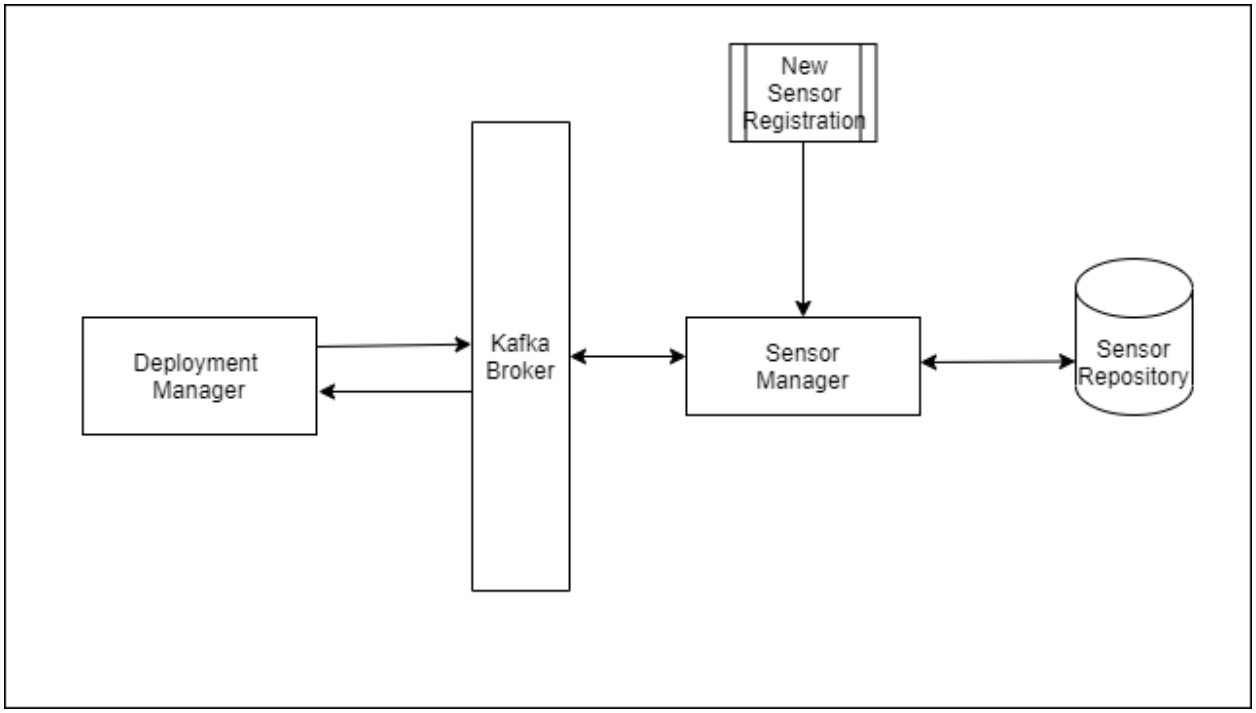

Diagram 1 : OVERVIEW

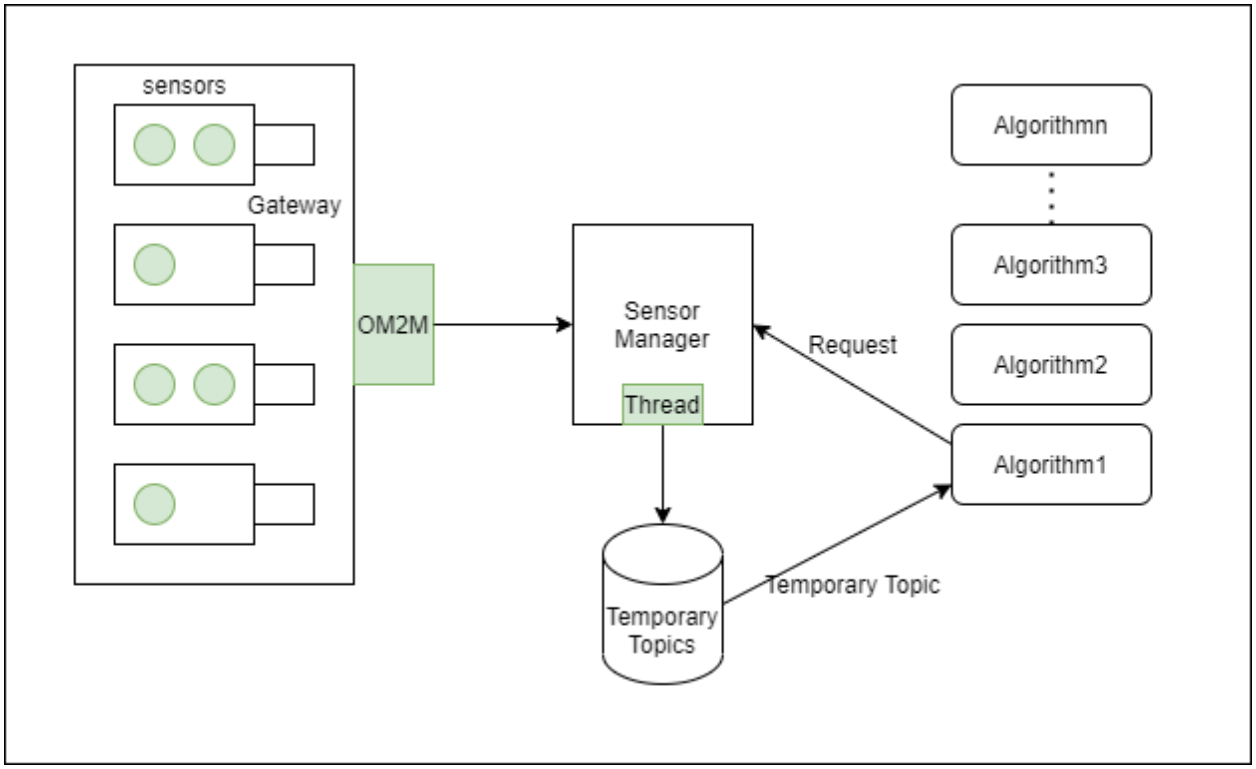

Diagram 2 : Data binding from sensors to algorithm