

# **GUDLAVALLERU ENGINEERING COLLEGE**

(An Autonomous Institute with permanent Affiliation to JNTUK, Kakinada)

**SHESHADRI RAO KNOWLEDGE VILLAGE**

Gudlavalleru – 521356

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## **SMART SECURITY AND SAFTEY SOLUTIONS BASED ON IOT FOR LARGE INDUSTRIAL PLANTS**

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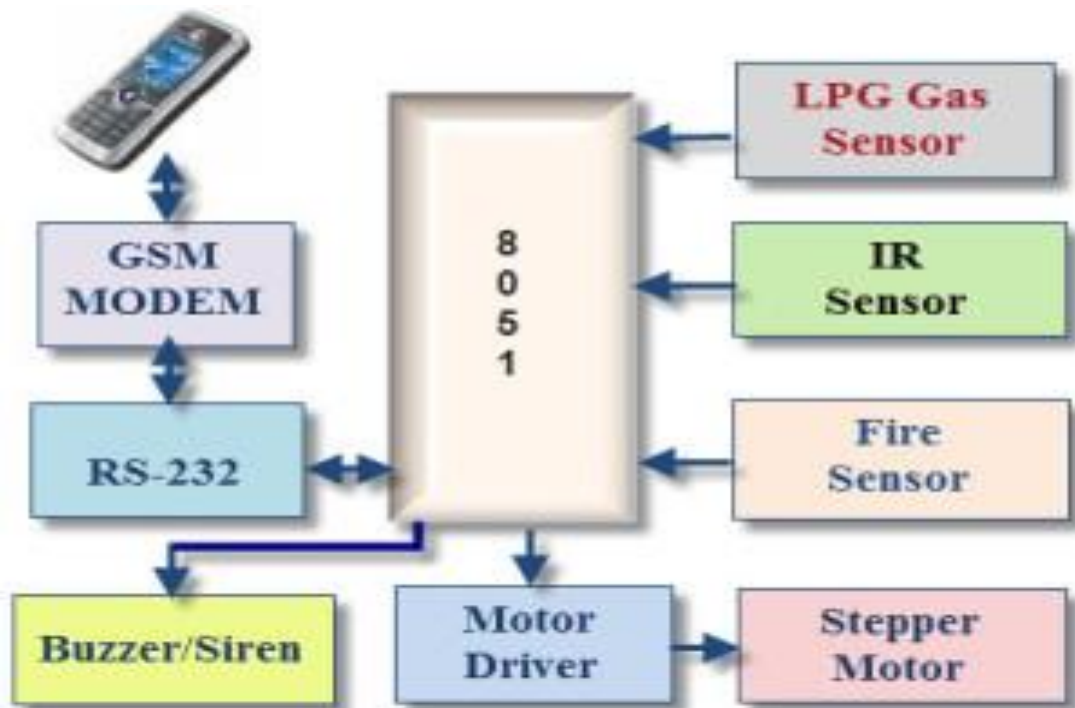
## **Objective:**

There is a sudden exponential use of security systems in our day-to-day life. For example, security in a business space, organization, or bank locker is important to every individual now. The main aim of this paper is to enhance the traditional security system. The security system based on the IoT platform has the potential of interacting real-time with the device. This entire economic system using IoT in real-time will allow mobile devices and computers to remotely track the activities occurring at the location where the IoT device is placed and records all the activities, which will be saved on one's cloud storage account. Security systems are designed to perform certain tasks when a secured zone is breached. The combination of the various technologies can be used synergistically as a smart security to control a system in a house/organization.

# **Introduction:**

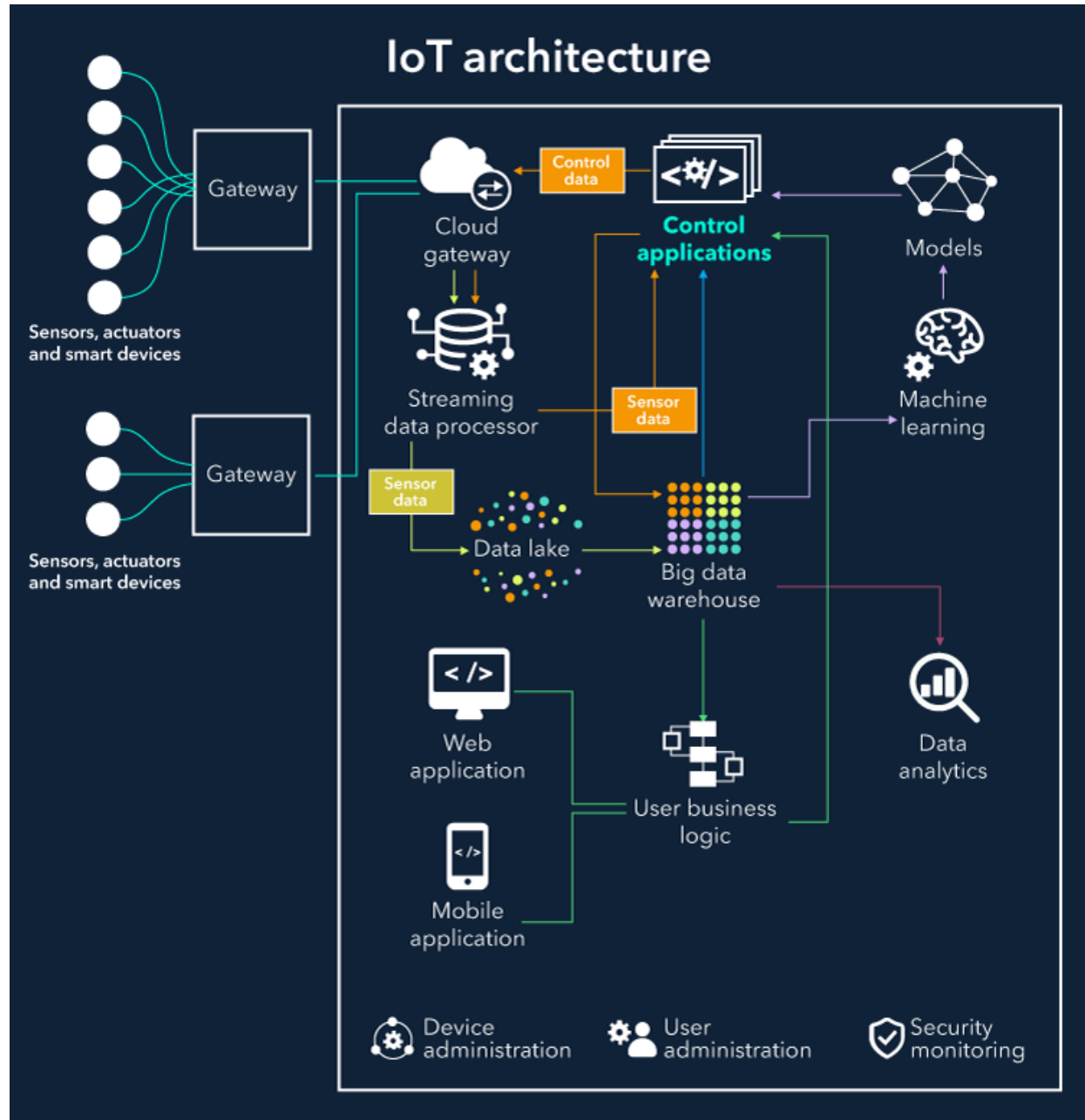
Now a days Internet of Things (IoT) is basically a fast-growing technology. IoT is basically the combination of physical device, software, sensors, network, wired or unwired technology etc... which is basically used to make an ecosystem of computing like collect and exchange data. In the Internet of Things applications, physical sensors collect different types of data from the field and transfer those data to the Internet the requirement for security makes many of us seek for alternative ways so as to safeguard their property. We are developing a system which is an integration of several mini system. This system generates Alerts/Alarms or take intelligent decisions using concept of IoT.

## Block Diagram:



The above Block diagram shows the creating the alert by sending message to the mobile phone using the GSM Module. There are high number of large industrial plants are there in the World. When there was any fire accident or any person missing in the factory, we provide some sensors to detect the fire and we uses the camera to detect the persons who are entering and leaving the industry. Thus, when an accident happens the platform, we developed send signal to buzzer and it will sound and using the GSM module it sends message to the mobile phone which is connected to it and also nearby fire station

# Architecture



To demonstrate the feasibility and effectiveness of this system, devices such as GSM, Bluetooth module, PIR motion reed sensor, gas sensor and laser sensors have been integrated with the proposed Security system for an organization. This integration is basically done for the purpose of higher security to maintain an organization in a proper and secure way. This system has two main modules: the hardware interface module (Arduino, GSM, Bluetooth and Sensors) and also the software communication module (Web application & Android application). The core component of the system is Arduino Mega 2560 microcontroller that is additionally capable of functioning as a micro web server and also the interface for all the hardware modules. The first one is controlling the appliances of the organization and second is controlling the security of the organization.

# Requirements

## Hardware Requirements:

- 8051 Microcontroller
- Fire sensor
- Buzzer
- IR sensor
- LCD display
- LPG Gas sensor
- GSM module
- Wi-Fi dongle

## Software Requirements:

- Python Idle
- Server
- Watson Studio



# Python Code

```
from cloudant.client import Cloudant
from cloudant.error import CloudantException
from cloudant.result import Result
from cloudant.result import Result, ResultByKey

# IBM Cloudant Legacy authentication

client = Cloudant("apikey-v2-19tnsio1aucl2iumux6t1auic0wej0ouorbmcthy6rc",
"9683b33231c604a4552d62ef60d95463",url="https://apikeyv219tnsio1aucl2iumux
6t1auic0wej0ouorbmcthy6rc:9683b33231c604a4552d62ef60d95463@2cb2e988-
2ce8-4573-b30a-57bb81162555-bluemix.cloudantnosqldb.appdomain.cloud")

client.connect()

database_name = "sensordata"

my_database = client.create_database(database_name)

if my_database.exists():

    print(f'"{database_name}" successfully created.')

    json_document = {

        "_id": "1001",

        "name":"prathiba"

    }

    new_document = my_database.create_document(json_document)

    if new_document.exists():

        print("Document '{new_document}' successfully created.")

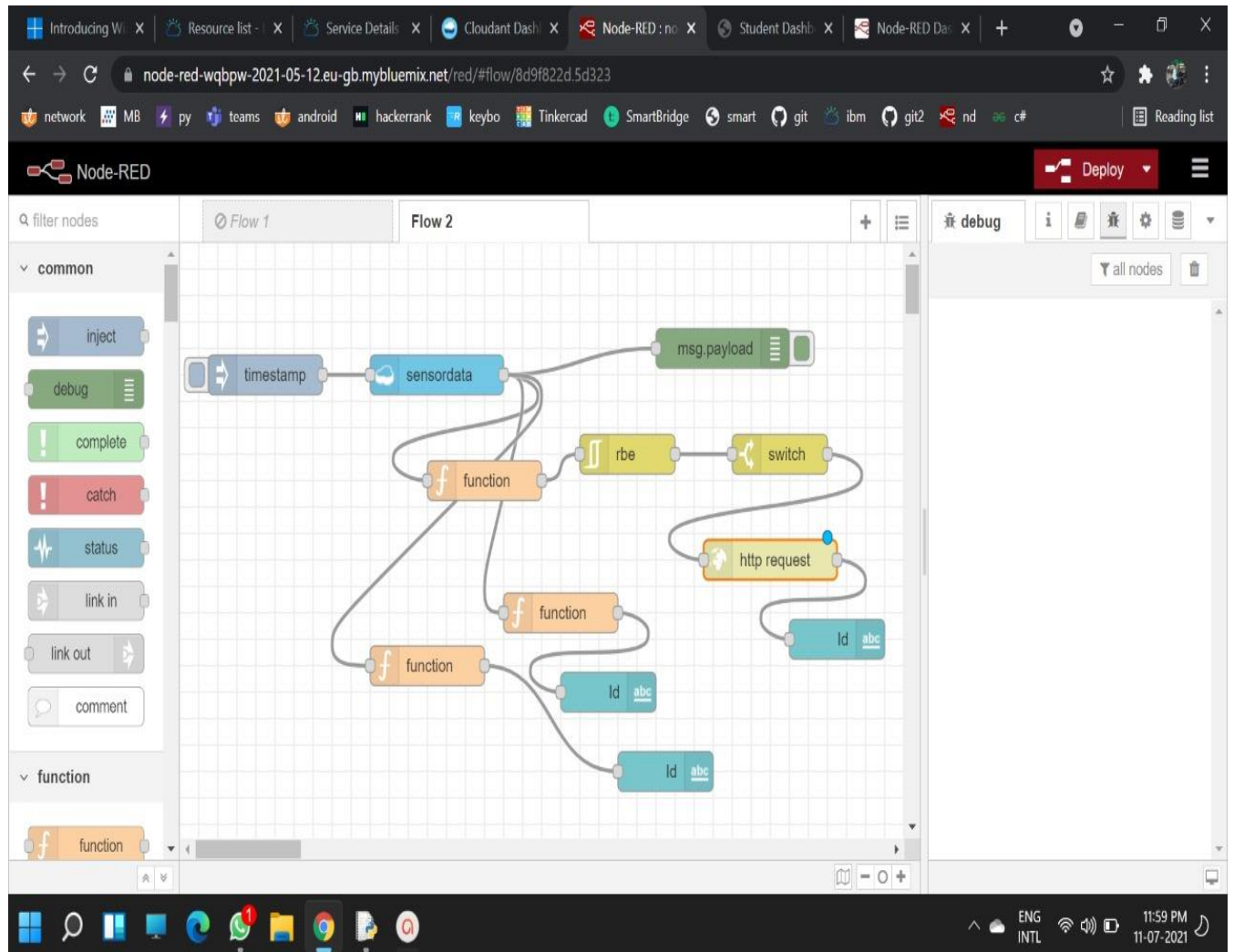
    result_collection = Result(my_database.all_docs, include_docs=True)

# Get the result for matching a key

result = result_collection['1001'] #search by id, if id=1001
```

```
print("-----")
print("the data with id =1001 is")
print (result)
print("-----")
# Iterate over the result collection
for result in result_collection:
    print(result)# it will print all the records
# First retrieve the document
for document in my_database:
    my_document = my_database['1001']
# Update the document content
# This can be done as you would any other dictionary
my_document['Id'] = 12345
my_document['Name'] = 'Prathiba'
my_document['Id1'] = 12456
my_document['Name1'] = 'Kalyan'
my_document['Id2'] = 12356
my_document['Name2'] = 'Ram'
# You must save the document in order to update it on the database
my_document.save()
result_collection = Result(my_database.all_docs, include_docs=True)
# Get the result for matching a key
result = result_collection['1001']
# Iterate over the result collection
print (result)
```

# Input



# Output

Introducing Wi... Resource list - i... Service Details... Cloudant Dash... Node-RED: no... Student Dashb... Node-RED Da... +

node-red-wqbpw-2021-05-12.eu-gb.mybluemix.net/red/#flow/8d9f822d.5d323

network MB py teams android hackerrank keybo Tinkercad SmartBridge smart git ibm git2 nd c# Reading list

Node-RED Deploy

filter nodes Flow 1 Flow 2

common

- inject
- debug
- complete
- catch
- status
- link in
- link out
- comment

function

- function

timestamp sensordata msg.payload

function rbe switch

function http request

Id abc

Id abc

Id abc

debug

7/11/2021, 11:59:56 PM node: 2ee03efc.9da9e2

msg.payload: array[1]

array[1]

0: object

- \_id: "1001"
- \_rev: "7-255a77ba778d489cdb07460e41e72e2f"
- name: "prathiba"
- Id: 12345
- Name: "Prathiba"
- Id1: 12456
- Name1: "Kalyan"
- Id2: 12356
- Name2: "Ram"

ENG INTL 12:00 AM 12-07-2021

# Result

Introducing W... x Resource list... x Service Details... x Cloudant Dash... x Node-RED : n... x Student Dashb... x Node-RED Da... x +

node-red-wqbpw-2021-05-12.eu-gb.mybluemix.net/ui/#/1/0?socketid=ih-HbZMs45LenLTAAAAJ

network MB py teams android hackerrank keybo Tinkercad SmartBridge smart git ibm git2 nd c# Reading list

Home

Default

```
{
  "return": true,
  "request_id": "fwkbd4n7j5o36sl",
  "message": [
    "SMS sent successfully."
  ]
}
```

Id	12456
Id	12356

flows.json Show all x

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Web Ui output

```
C:\Users\chair\AppData\Local\Programs\Python\Launcher\py.exe
'sensorData' successfully created.
Document '{new_document}' successfully created.
-----
the data with id =1001 is
[{'id': '1001', 'key': '1001', 'value': {'rev': '11-384a3ecf9c79c0a2941bb2de28838833', 'doc': {'_id': '1001', '_rev': '11-384a3ecf9c79c0a2941bb2de28838833', 'name': 'prathiba', 'Id': 12345, 'Name': 'Prathiba', 'Id1': 12456, 'Name1': 'Kalyan', 'Id2': 12356, 'Name2': 'Ram'}}}]
-----
[{'id': '1001', 'key': '1001', 'value': {'rev': '11-384a3ecf9c79c0a2941bb2de28838833', 'doc': {'_id': '1001', '_rev': '11-384a3ecf9c79c0a2941bb2de28838833', 'name': 'prathiba', 'Id': 12345, 'Name': 'Prathiba', 'Id1': 12456, 'Name1': 'Kalyan', 'Id2': 12356, 'Name2': 'Ram'}}}]
```

## Conclusion

Developing an industrial system using internet of things technology. We are intended to produce an application near future for the observation of industrial appliance. We successfully developed the smart security for large scale industries to avoid the accidents using IBM IoT Watson Platform.



