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# Containment Zone Application

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**ABSTRACT:** The ongoing pandemic is affecting the lives of millions of people, changing society by enacting new rules for social life, business, and travel. This project helps people to be aware of the pandemic and helps people to be safe. This project's motivation is to create an application that connects people through cloud technology and tracks the movement of the user through its mobile GPS system and when the user enters the contaminated zone. The contaminated zone is marked by gathered case data from the hospitals through their registers and the registered data is analyzed by Kubernetes cluster algorithm is created for data analysis of virus data provided by the hospitals and zones are updated.

**KEYWORDS:** Digital Neuromorphic, Spiking neural network, Fault-tolerant, Spiking neuron processing cores

## I. INTRODUCTION

Individuals in the current world travel to many locations and interact with people from other regions. However, in addition to interacting with people, they also come into contact with various bacteria and viruses, but they are not aware of this. Making a web application that offers all the zonal information will help raise awareness of the virus or bacterium that is spreading in that area and prevent users from becoming infected. This will help prevent individuals from becoming sick from the virus or bacteria. developing a web application to identify and report the containment zone that is impacted. The regions are updated using a geo-fencing map, which is coupled to a cloud database and a cluster algorithm called Kubernetes. This is a collection of interconnected machines that operate as a single entity. They are made up of worker nodes, which act as a compute host on which one may build, run, and manage contained applications on servers where the data are updated periodically. As a result, these jobs can take advantage of the whole amount of memory and processing power available on each device to boost speed. The cloud-native database Db2 was created to power scalable real-time analytics and low-latency transactions. It offers a solitary engine. The data are produced by cloud cluster nodes, which facilitates effective operation of the programme.

## II. RELATED WORK

The World Health Organization has classified the Covid-19 coronavirus outbreak as a global pandemic. Lockdown and awareness (social distance, wearing of masks, etc.) among individuals are found to be the only ways to stop the community spread of this disease given the worrisome increase in affected cases around the world. Without widespread public awareness and proactive actions taken by the populace, it is exceedingly challenging to stop the communal transmission even during a lockdown in a highly populated nation like India. Recently, red, orange, and green zones were established for a number of containment zones spread out around the nation. The red zones represent infection hotspots, the orange zones represent some infection, and the green zones represent an infection-free environment. This essay mostly examines. A coronavirus illness called COVID-19 was brought on by SARS-CoV2. It has spread like an epidemic throughout the entire planet, necessitating careful data interpretation in order to broaden research results. The Internet of Medical Things (IoMT) devices are essential for achieving autonomous operation in the medical and healthcare systems, which offers medical staff and patients a healthy environment. Health-related information, such as temperature, blood pressure, oxygen saturation, and heart rate, is communicated during an emergency to evaluate the state of the patients. Low-power sensor nodes are placed on the patient's body, and they periodically produce an analysis report that is transmitted to the medical centre via the mobile sink. Analyzing security risk and energy use is still difficult. When it comes to the problem of uneven energy consumption, the low-power. Coronavirus disease 2019 (COVID-19) is an infectious illness brought on by the SARS-CoV-2 coronavirus, which has spread globally and caused an unparalleled pandemic. The pandemic's rapid spread led

numerous countries to enforce lockdowns to isolate the populace, and new quarantine regulations were adopted. The main difficulties that daily commuters (workers or students) confront now that the government has loosened the limitations include keeping a safe distance from other people, regularly washing hands, donning masks and face shields, contact tracing, etc. When utilising public transportation or at work, it might be challenging to maintain social distance and always use hand sanitizer. Additionally, many people do not keep track of their body temperature, heart rate, or oxygen saturation level.

### III. METHODOLOGY

This project has a nice potential to be applied in accessing of containment zone regions, where the zone information can be viewed by users. Dynamic allocation by Kubernetes cluster for each user data is loaded in database and managed by cloud source. It's an application to provide the case data of each zone and its infection level. Queries are solved by chatbot in application.

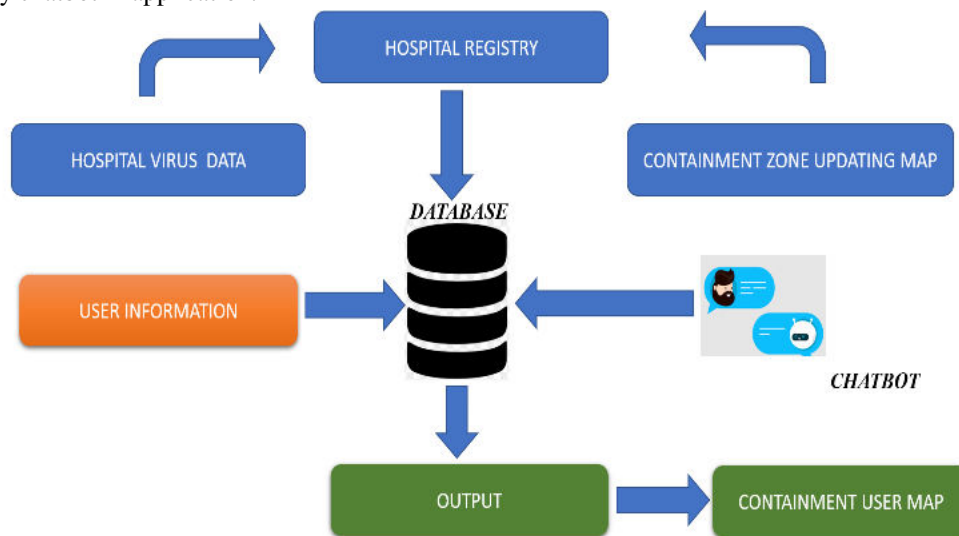


Fig: 1Flowchart

**CLOUD DB2** - A collection of data that is handled is called a Db2 database. A database is a sizable, structured set of permanent data that serves as a repository for related data and a tool for retrieval and manipulation. Access to logical storage structures can be controlled without affecting the physical storage of data. Data Definition Language, or DDL, commands are used to create Db2 databases, which are made up of tablespaces, rows and columns-containing tables, views, indexes, stored procedures, and other supporting structures. An organization's business requirements can be supported by a DBA or developer using a Db2 database and its underlying structures to create, read, update, and remove data. Without compromising on performance, actionable compression can reduce storage requirements. It is possible to evaluate many query predicates without first needing to decompress the data.

**KUBERNETES CLUSTER** - The deployment, management, and scaling of containerized applications may be scheduled and automated using the Kubernetes container platform. As the fundamental building blocks of contemporary cloud architecture, virtual machines (VMs) are being challenged, if not supplanted, by Kubernetes and the larger container ecosystem. Because of this ecosystem, businesses can provide a high-productivity Platform-as-a-Service (PaaS) that handles numerous infrastructure- and operations-related responsibilities concerns pertaining to cloud-native development, allowing development teams to concentrate entirely on coding and creativity.

**CONTAINERS** – Containers are small, executable program components that include the application source code along with all necessary OS libraries and dependencies to run the code in any setting. By isolating processes and restricting the amount of CPU, memory, and disc those processes can access, containers make use of an operating system (OS) virtualization technique that enables several programmes to share a single instance of an OS. The foundation of the Kubernetes architecture is CLUSTERS. The nodes that make up the clusters each serve as a single compute host (virtual or physical machine). Each cluster is made up of a master node, which acts as the cluster's command centre,

and several worker nodes, which deploy, operate and manage containerized applications. A scheduler service that is run by the master node automates container deployment depending on developer-specified deployment requirements and available computing power. The tool being used to manage the containers is present on each worker node.

**ASSISTANT CHATBOT** - Any messaging platform, application, device, or channel may receive answers from Watson Assistant, an AI-powered virtual agent, quickly, consistently, and accurately. Watson Assistant uses AI and natural language processing to develop conversational interfaces into any application, device, or channel, boosting its capacity to solve problems the first time while removing the annoyance of extended wait times, tiresome searches, and ineffective chatbots. The majority of virtual assistants attempt to simulate human interactions, but Watson Assistant knows when to consult a knowledge base, when to seek clarification, and when to refer a user to a live person. The assistant you create assists your customers with chores and provides information like a human personal assistant would. To do this, you specify actions.

```
from flask import Flask

app = Flask(__name__)

@app.route("/")
def home():
    return "Hello, World!"

if __name__ == "__main__":
    app.run(debug=True)
```

Fig: 2Chatbot

**ALGORITHM** -Environments using Kubernetes are becoming widely dispersed. They can be set up in a variety of on-site datacenters, public clouds, and edge locations. Organizations that want to use Kubernetes at scale or in production will need to be able to manage many clusters deployed across environments, such as those for development, testing, and production. A collection of Kubernetes clusters are managed by an IT team using Kubernetes cluster management. by each node in the cluster and is connected to the API server. The second involves using the API server's proxy functionality to connect any node, pod, or service to the API server using legitimate client credentials. It's a good idea to give the kubelet client credentials in the form of client certificates.

To secure the communication pathways from the control plane to the nodes, Kubernetes offers SSH tunnels. In this configuration, the API server connects to the SSH server listening on port 22 and starts an SSH tunnel to each node in the cluster. All traffic going to a kubelet, node, pod, or service is then routed through the tunnel. By using this tunnel, the nodes' traffic is protected from exposure to networks outside of that in which they are operating.

The integration of services with controlled load balancers, IP addresses, network packet filtering, and target health checking is a feature of cloud infrastructure. When you declare a Service resource that needs load balancers or other infrastructure components, the service controller communicates with the APIs of your cloud provider to configure them.

**FLASK**- It simplifies the web application design process. Flask enables us to concentrate on what the consumers are asking for and the appropriate kind of response to provide. Compared to the Django web framework, Flask is thought to be more Pythonic because the comparable web application is usually more explicit. Due to the lack of boilerplate code required to launch a straightforward app, Flask is also simple to use for beginners.

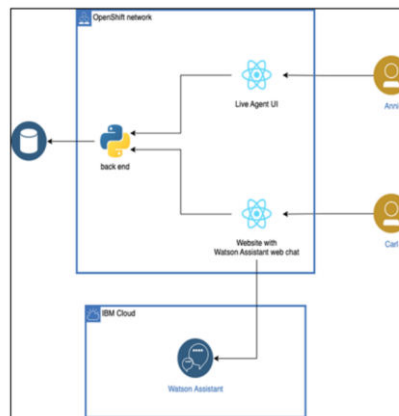


Fig 3: Flask Sample

LOCAL HOST URL USING FLASK- Making the web application design process simpler. Flask enables us to concentrate on what the users are asking for, the type of response to provide, and the creation of local host urls .The key concept is that 127.0.0.1 and localhost both refer to this local machine, which is what 127.0.0.1 denotes.

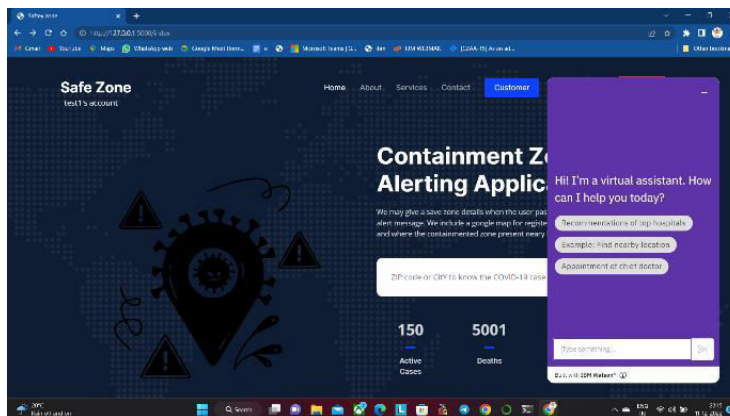
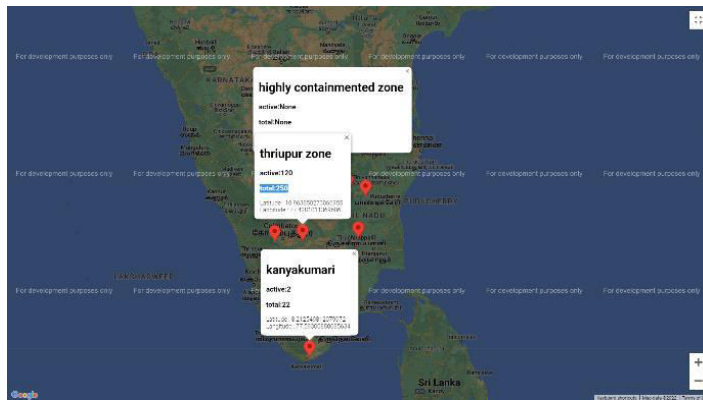
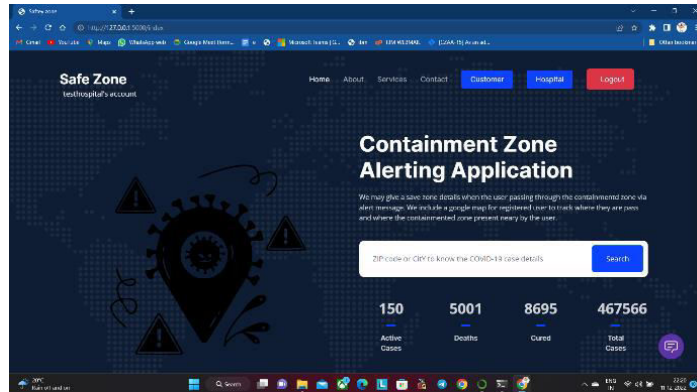
HOSPITAL REGISTRY - Each and every hospital provided a database for each account for entering data of virus/bacteria in their respected zone . The data's are entered in zone detection map the number of cases in their hospital region by entering the number of active cases , death cases, cured cases and total number of cases are entirely displayed in index page. Hospital admin are only allowed to change the data of virus/bacteria in application. They report the riskness of infection among the surroundings and reduce the fake news among the people . Infected regions are updated every week as routine work of admin.

USER REGISTRY -Each and every user provided an user account and the user information are stored in database to verify each time whenever they login is user login credentials are matched are not. User can view zone map of affected regions to avoid travel in infected regions. They can avoid contacting affected regions and spreadness can controlled because of that fake news can also avoided user application are updated according to the hospital update in detection zone map and user can't change the data of virus/bacteria ,they can only view the map. User has chatbot in the application which has access of direct contact of hospital for queires , consultation in online, booking appoinments for offline consultation, medical service's , contact with live agents for further queries.

They can rise issue is there any problem regarding our application by information we provided in the web application. Solve insecurities during pandemic situation.

#### IV.RESULTS

Utilizing a cloud database, the application used to detect confinement zones is trained using a Kubernetes cluster. The operation, which updates data of the virus-infected zone every 15 days, is carried out by several cluster nodes. The kubernetes cluster compares the new data in database with the previous data ,if changes occurred updated. The process will repeat for every 15 day.



### V.CONCLUSION

The project's findings show that the suggested solution combination provided precise information on viruses and bacteria as well as the identification of containment zones in each region. The Kubernetes cluster was used to implement the experiment as a real-time application while allocating dynamic data. The data was generated from the hospital registry and implemented using Anaconda software, which is connected to the cloud. As a result, it is simple to identify affected areas, which lowers the danger for all users.

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