Project Design Phase-I
Solution Architecture

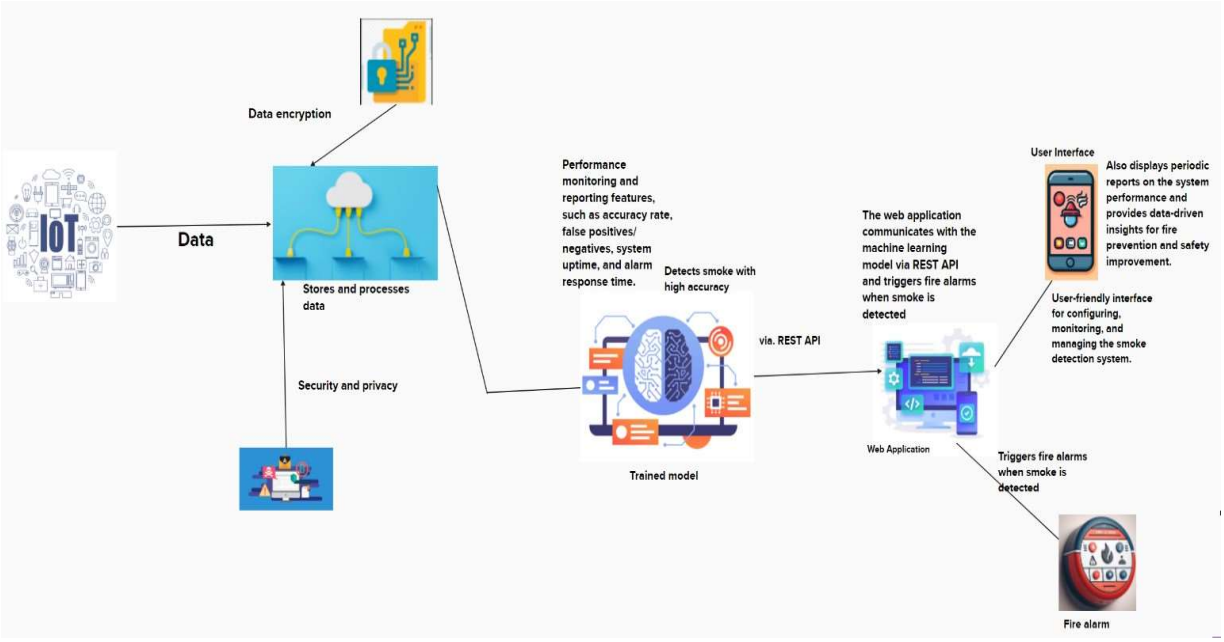
Date	**23 October 2023**
Team ID	**592862**
Project Name	**Detect Smoke with The Help of IOT Data nd Trigger A Fire Alarm**

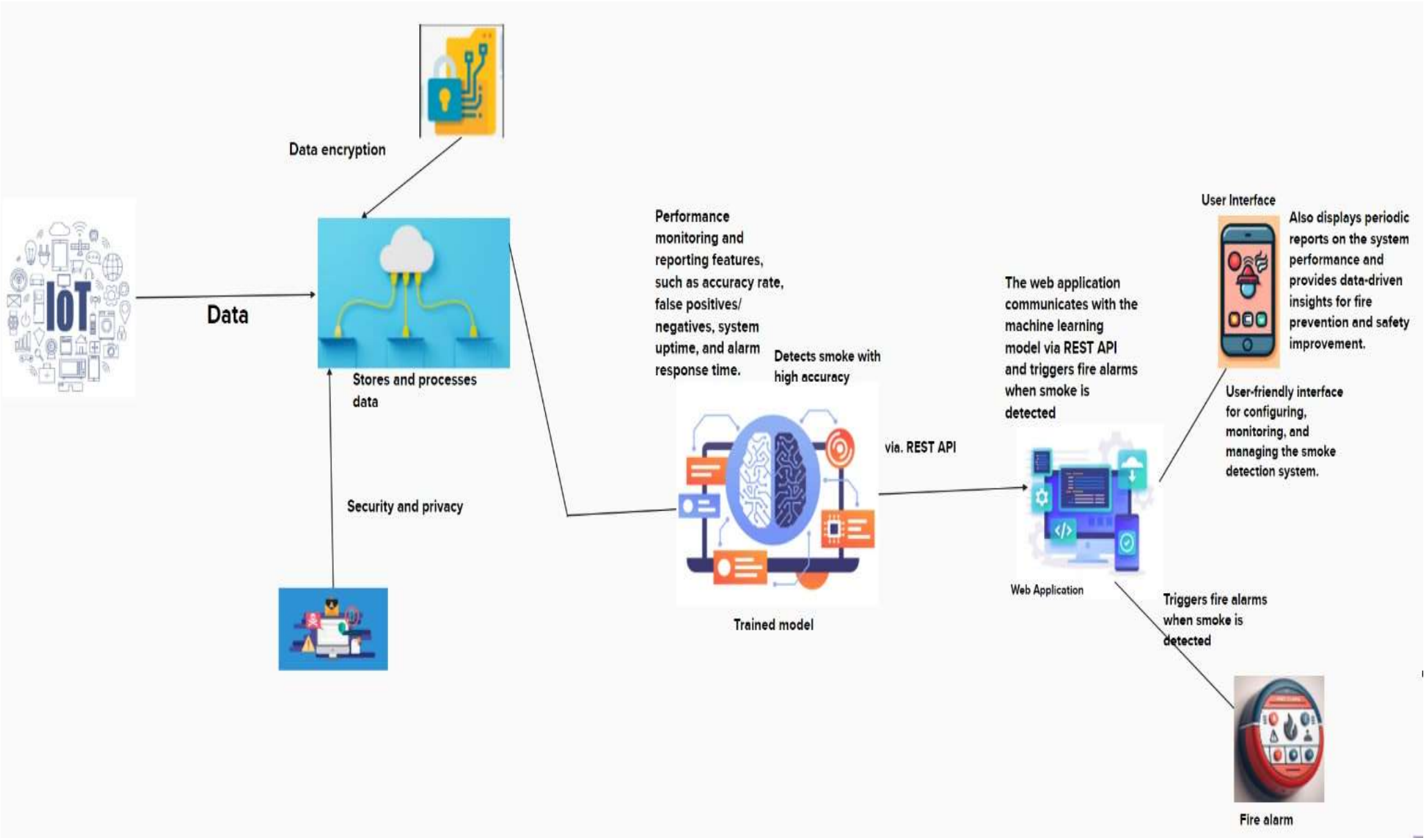
Solution Architecture:

The smoke detection system consists of four layers: IoT layer, Data layer, Machine Learning layer, and Application layer.

- IoT layer: This layer consists of various smoke sensors that are installed in different locations and environments. The sensors collect smoke data and send it to the cloud via MQTT protocol.
- Data layer: This layer consists of a cloud platform that stores and processes the smoke data from the sensors. The cloud platform also provides data encryption, security, and privacy features to protect the data from unauthorized access or breaches.
- Machine Learning layer: This layer consists of a machine learning model that is trained on the smoke data and can detect smoke with high accuracy. The model is deployed on the cloud platform and can be accessed via REST API. The model also provides performance monitoring and reporting features, such as accuracy rate, false positives/negatives, system uptime, and alarm response time.
- Application layer: This layer consists of a web application that provides a user-friendly interface for configuring, monitoring, and managing the smoke detection system. The web application communicates with the machine learning model via REST API and triggers fire alarms when smoke is detected. The web application also displays periodic reports on the system performance and provides data-driven insights for fire prevention and safety improvement.

Solution Architecture Diagram:




Data encryption
IoT
Data
Stores and processes data
Security and privacy
Performance monitoring and reporting features, such as accuracy rate, false positives/ negatives, system uptime, and alarm response time.
Detects smoke with high accuracy
Trained model
via. REST API
The web application communicates with the machine learning model via REST API and triggers fire alarms when smoke is detected
Web Application
User Interface
Also displays periodic reports on the system performance and provides data-driven insights for fire prevention and safety improvement.
User-friendly interface for configuring, monitoring, and managing the smoke detection system.
Triggers fire alarms when smoke is detected
Fire alarm