Project planning phase

(technology stack)

Date	27th October 2023
Team ID	Team-592381
Project Name	Detect smoke with IOT data and trigger a fire alarm
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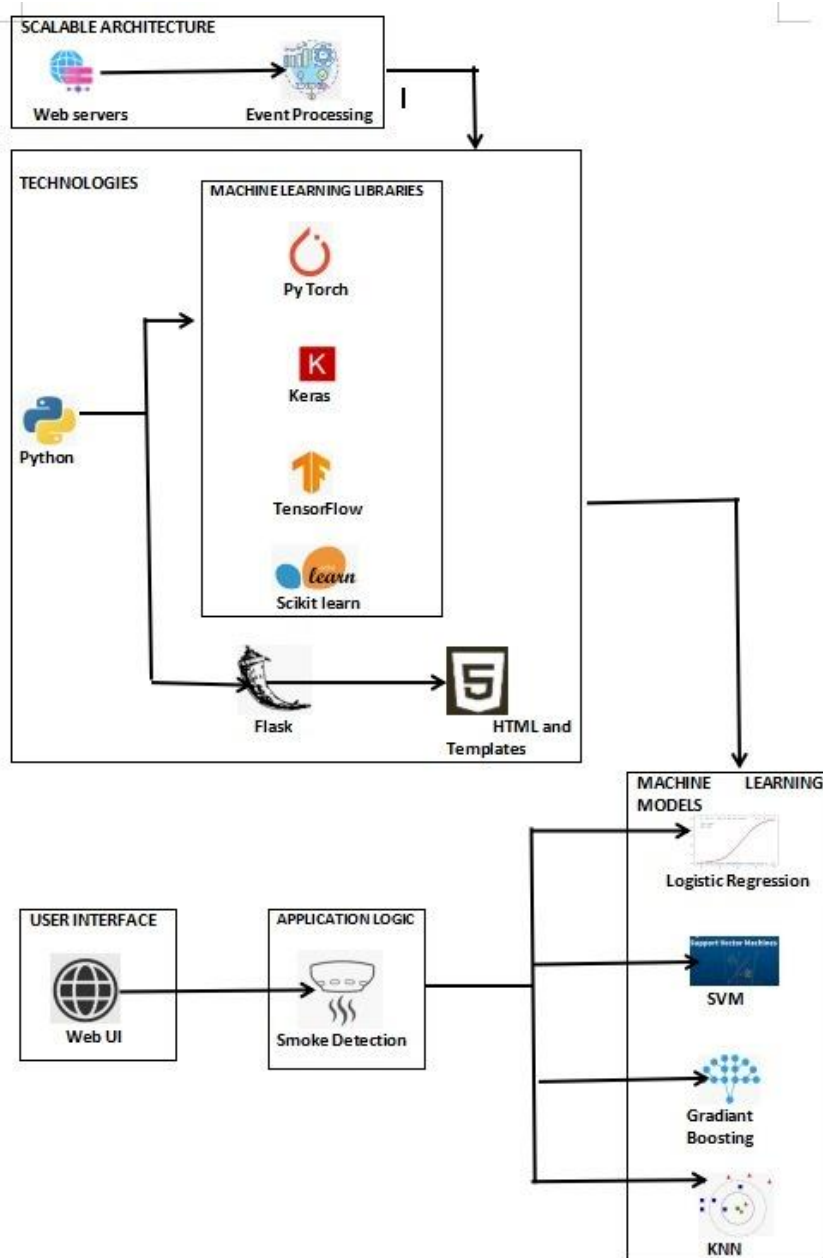# Technology Architecture & Stack

Technical Architecture:

Table-1 : Components & Technologies:

S.no	Component	Description	Technology
1	User Interface	Web UI	HTML
2	Application logic	The smoke detection with sensors application is designed to detect smoke or fire in industries and trigger an alarm to alert the concerned personnel. Smoke sensors are installed in the industrial premises which sense the presence of smoke or fire. When the sensors detect smoke or fire, they send a signal to the system which triggers an alarm. This system helps in preventing any unwanted incidents and ensures the safety of the workers and the industrial premises.	Flask
3	Machine Learning Model	Logistic Regression is a machine learning algorithm used in smoke detection systems that utilize IoT devices. When smoke is detected, the algorithm triggers an alarm to alert individuals of potential danger. SVM (Support Vector Machine) is a machine learning algorithm used in smoke detection using IoT. It analyzes sensor data to classify smoke patterns and triggers an alarm for timely response. Gradient-based smoke detection using IoT technology enables real-time monitoring of smoke levels and triggers an alarm for immediate response, enhancing safety measures KNN (K-Nearest Neighbors) is a machine learning algorithm utilized in smoke detection systems using IoT. It analyzes sensor data to classify smoke patterns and triggers an alarm based on the nearest neighbors' characteristics.	Logistic Regression , SVM, Gradient Boosting , KNN

Table-2 : Application Characteristics:

S.no	Characteristics	Description	Technology
1	Open Source Framework	**Python**: Python is a high-level, general-purpose programming language commonly used in a wide range of applications, including web development and machine learning. **Flask**: Flask is an open-source micro web framework for Python. It provides the necessary tools and features for building web applications and APIs. **HTML and Templates**: HTML (Hypertext Markup Language) is the standard language for creating web pages. In the project, HTML is used to structure and create the user interface of the web application. Templates are often used to generate HTML dynamically within Flask, allowing for dynamic content rendering. **Machine Learning Libraries**: Various open-source machine learning libraries and frameworks can be used in the project, depending on the specific requirements. Some commonly used libraries for machine learning in Python include: **scikit-learn**: A library for classical machine learning algorithms. **TensorFlow**: An open-source machine learning framework developed by Google. **Keras**: An open-source deep learning framework that runs on top of TensorFlow.	Python Flask HTML and Templates Machine Learning Libraries
2	Scalable Architecture	**Web Servers**: Deploy multiple web servers to handle user requests and serve the web application. Use a web framework like Flask for building the application. **Event Processing**: Process events from the machine learning model and IoT sensors using a scalable event processing system. This system can trigger alarms based on predefined conditions.	Flask