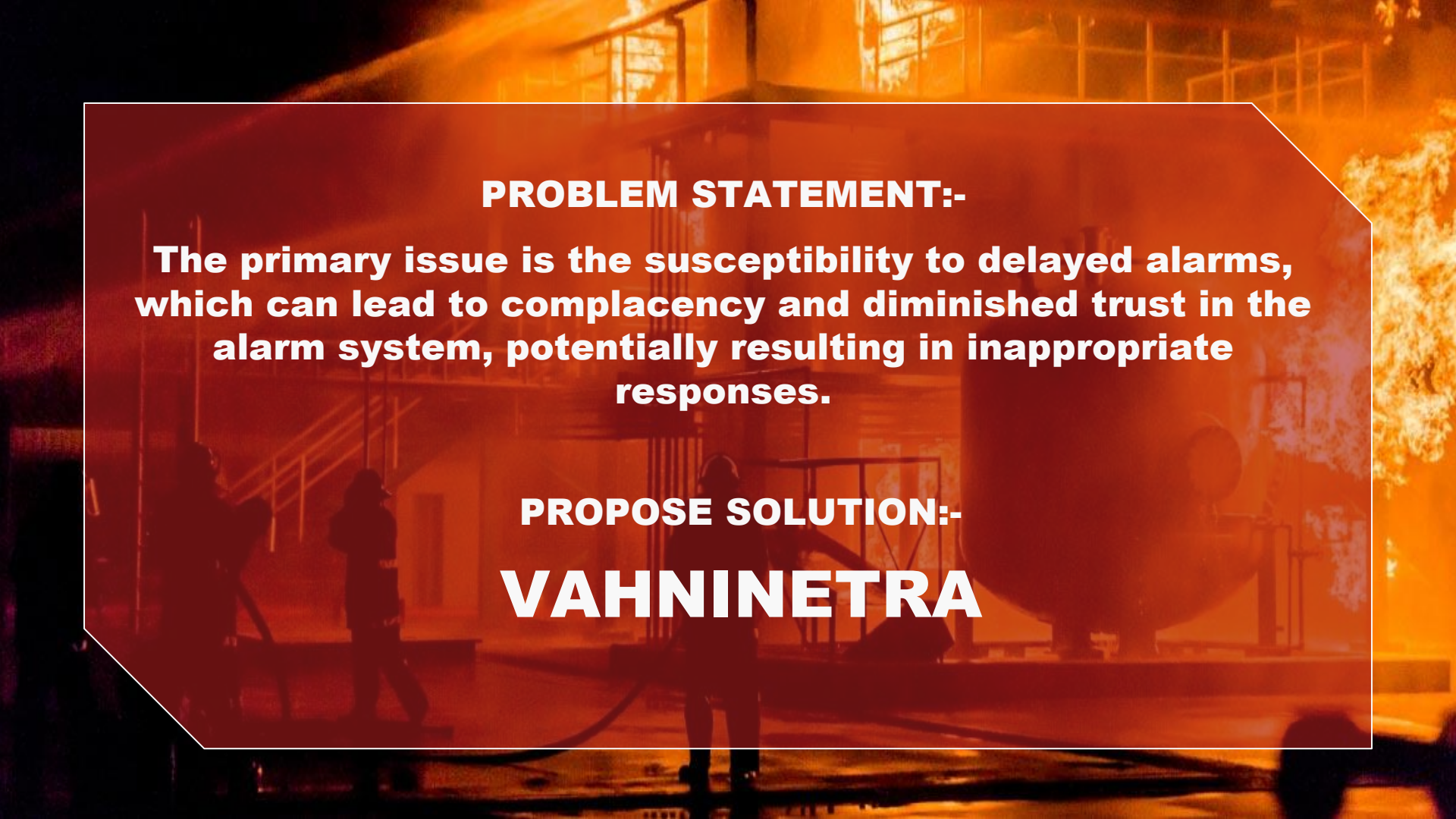
AI FOR WORKPLACE: HEALTH AND SAFETY

VAHNINETRA

TEAM AREA51

DHRUVRAJSINH VANSIA
DISHA KAPADIA
VISHWA PATEL



PROBLEM STATEMENT:-

The primary issue is the susceptibility to delayed alarms, which can lead to complacency and diminished trust in the alarm system, potentially resulting in inappropriate responses.

PROPOSE SOLUTION:-

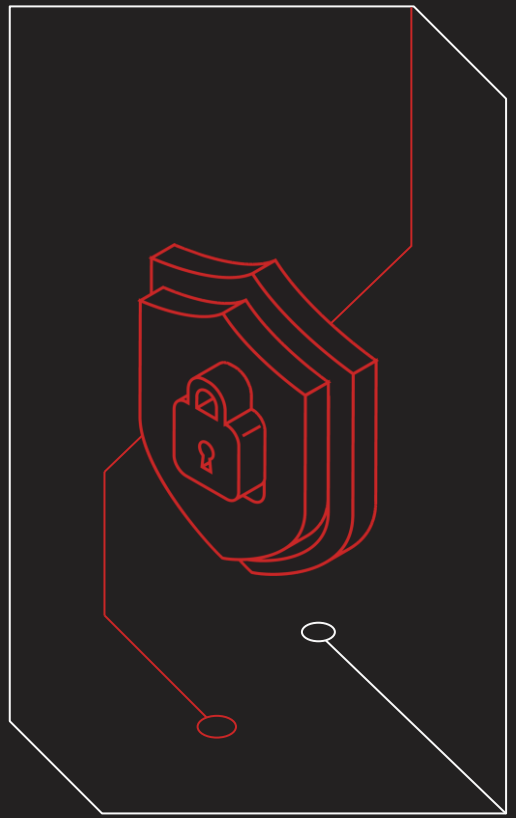
VAHNINETRA

Contents

Fire & Smoke Alarm System

- Fire in commercial spaces, especially manufacturing plants, are serious accidents that can cause unprecedented loss of goods, company assets and human life.
- Smart fire & smoke detectors are built using artificial intelligence and machine learning models to detect smoke emissions in an industrial setting and send real-time alerts to help control fire and its hazardous effects.
- Implementing smart fire & smoke detectors for industries is an effective solution for improving fire safety. With advanced features such as remote monitoring, accuracy and reliability compared to previous-generation detectors, this technology is a necessity for modern industrial environments.

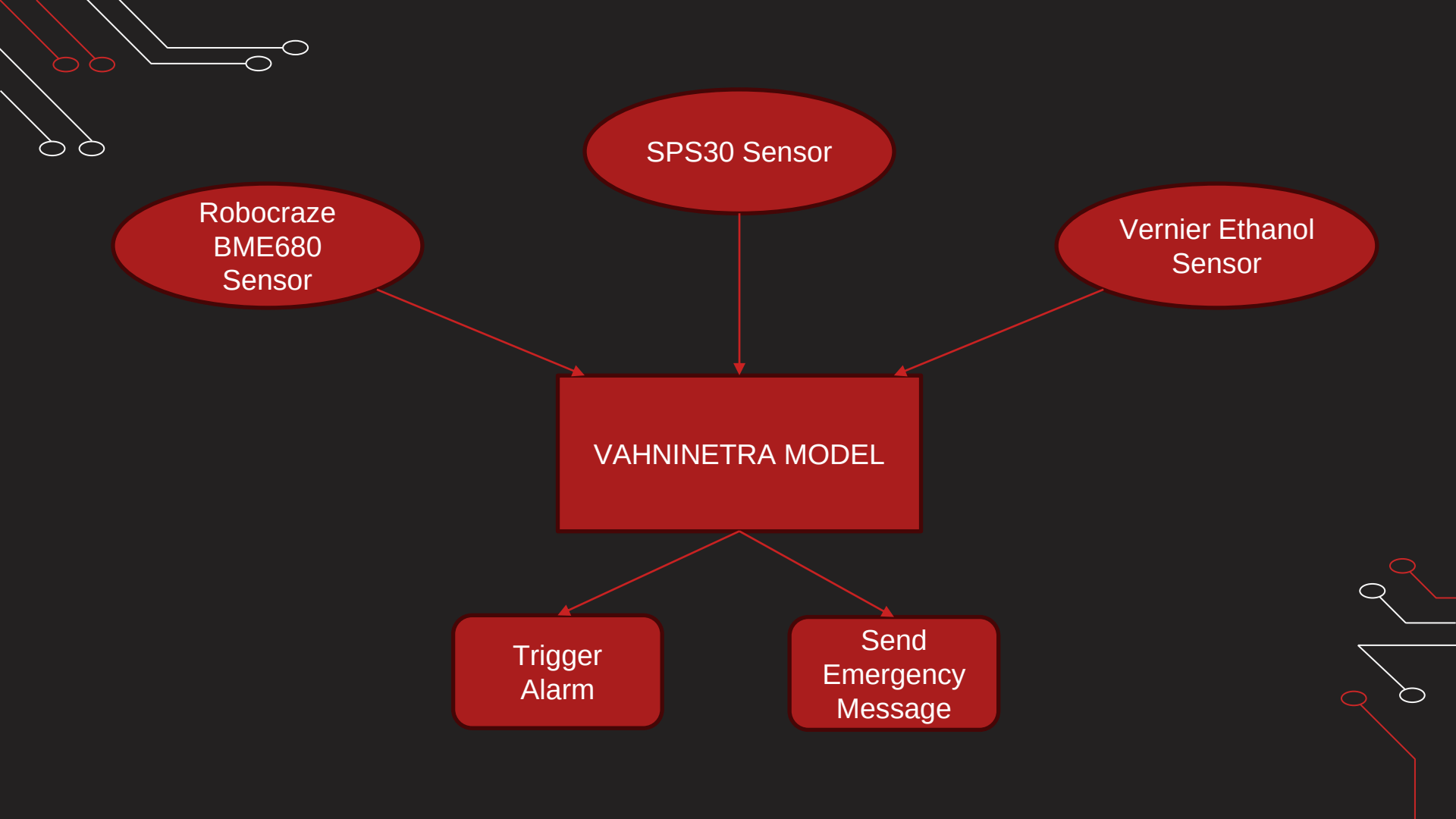
Dataset and Parameters



Data can be taken from sensors which can directly be uploaded on CLOUD, and can be instantly interfaced with our model.

Parameters:-

- Temperature (C)
- Humidity (%)
- Total Volatile Organic Compounds- TVOC (ppb)
- CO2 Equivalent Concentration- eCO2 (ppm)
- Raw Hydrogen
- Raw Ethanol
- Pressure (hPa)
- Particulate Matter- PM
- Concentration of PM- NC
- Count- CNT
- Fire Alarm (0/1)


SPS30 Sensor
Robocraze BME680 Sensor
Vernier Ethanol Sensor
VAHNINETRA MODEL
Trigger Alarm
Send Emergency Message

Classifier Models

01
Logistic Regression

02
Support Vector Machines

03
Bernoulli Naïve Bayes

04
Gaussian Naïve Bayes

05
K- Nearest Neighbour

06
Random Forest

Model Evaluation

Logistic Regression

R2 Score= -0.40
MAE= 28.6%
MSE= 28.6%
Accuracy= 71.3%

Support Vector Machines

R2 Score= -0.40
MAE= 28.6%
MSE= 28.6%
Accuracy= 71.3%
(More Time Taken)

Bernoulli Naïve Bayes

R2 Score= -0.29
MAE= 26.5%
MSE= 26.5%
Accuracy= 73.4%

Gaussian Naïve Bayes

R2 Score= 0.153
MAE= 17.3%
MSE= 17.3%
Accuracy= 82.6%

K- Nearest Neighbour

R2 Score= 0.99
MAE= 0.015%
MSE= 0.015%
Accuracy= 99.98%

Random Forest

R2 Score= 1.0
MAE= 0%
MSE= 0%
Accuracy= 100%

Why VahniNetra?

1) Our Model is more accurate and reliable than traditional fire & smoke detectors, which often fail to detect smoke on time or are triggered by false alarms.

2) The advent of AI-powered wireless technology in smoke detectors has encouraged small-medium businesses to invest in fire safety systems.

3) Our model can provides remote monitoring and remote alerting to specified field operator.

4) Traditional fire and Smoke detectors lacks in detection of small fires and fumes (typically caused by raw hydrogen).

5) Compared to traditional fire and smoke detectors,our model can provide live data about atmospheric conditions.

6) In industries, The traditional detectors are installed at high ceiling causing delay in detection of fire and smoke.

Applications

Industries
Space Craft
Huge Malls & Multiplexes
Textiles & Factories

THANK YOU

NAVATECH Groups MSBC Group HOLBOXAI

GOOGLE DEVELOPERS