# Project Initialization and Planning Phase

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| Date | 11-07-2024 |
| Team ID | 740047 |
| Project Title | SMOKE DETECTION USING IOT DATASET |
| Maximum Marks | 3 Marks |

**Project Proposal (Proposed Solution) template**

A proportional solution for smoke detection typically refers to a system or method that provides a response proportional to the level of smoke present, rather than simply triggering an alarm based on a binary threshold (smoke/no smoke).

| **Project Overview** | |
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| Objective | The primary objective of this project is to develop an advanced smoke detection system using IoT devices and a comprehensive dataset. The system aims to achieve higher accuracy in detecting smoke, faster response times, and the ability to provide real-time alerts and data to users. This will be accomplished by leveraging machine learning algorithms to analyze the data collected from various IoT sensors |
| Scope | Smoke detectors are employed to detect smoke in the surrounding environment. In case of a fire emergency, the system can trigger alarms and activate safety systems. The systems come in different types depending on the use and environment used, where both photoelectric and ionization detectors are effective smoke sensors. These systems are really important and are being employed in many commercial and residential areas. |
| **Problem Statement** | |
| Description | Smoke alarms detect fires by sensing small particles in the air. Once they detect those particles above a certain level, they signal the alarm to sound so that you and your family can get to safety and call 911. |
| Impact | A successful solution will enhance fire safety in buildings, potentially saving lives and reducing property damage. It will provide peace of mind to occupants and building managers, knowing that their smoke detection system is reliable and effective. |

| Proposed Solution | |
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| Approach | Employing machine learning techniques to analyze and predict whether smoke is present or not. |
| Key Features | -Implementation of a machine learning-based smoke detector model.<br>-smoke detectors contain audible alarms.<br>-visible alarms with LED's. |

**Resource Requirements**

| Resource Type | Description | Specification/Allocation |
|---|---|---|
| **Hardware** | | |
| Computing Resources | CPU/GPU specifications, number of cores | T4 GPU |
| Memory | RAM specifications | 8 GB |
| Storage | Disk space for data, models, and logs | 1 TB SSD |
| **Software** | | |
| Frameworks | Python frameworks | Flask |
| Libraries | Additional libraries | scikit-learn, pandas, numpy, matplotlib, seaborn |
| Development Environment | IDE, version control | Jupyter Notebook, Pycharm |
| **Data** | | |
| Data | Source, size, format | Kaggle dataset, 614, csv |