PRANVEER SINGH INSTITUTE OF TECHNOLOGY

Major Project Proposal

Team Id:

26_CS_DS_4B_03

Team Details:

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Project Title: Airsona: An AI-Driven AQI Solution

Domain: (Select all relevant Options)

1. **Software-Web Application**	2. Software-Mobile Application
3. **Artificial Intelligence/Machine Learning/Deep Learning**	4. **Computer Vision/Image Processing**
5. Blockchain	6. Internet of Things
7. Natural Language Processing	8. **Big Data / Cloud Computing**

Problem Statement:

Air Quality Index is becoming a serious problem in cities, affecting people's health, the environment, and the economy. Traditional methods like planting trees often fail because they are not planned properly, the wrong tree species are chosen, and there is no system to predict pollution levels. Additionally, businesses have no real motivation to take part in eco-friendly initiatives.

As cities grow and industries expand, pollution levels keep rising, making it harder for authorities to control the problem. Without real-time monitoring and accurate forecasting, cities can only react to pollution after it happens instead of preventing it. Many businesses and landowners hesitate to participate in tree-planting efforts due to concerns about financial loss. Also, environmental policies often do not translate into effective action due to poor coordination. To solve this, a smart, technology-driven approach is needed to ensure trees are planted in the right places, provide real-time pollution data, and create incentives for businesses to contribute to cleaner air.

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Proposed Solution:

To tackle cities air pollution effectively, this project introduces a **technology-driven SaaS model** that optimizes tree planting strategies and improves air quality.

1. **Smart Tree Plantation Strategy:** AI identifies the best locations for planting trees to maximize pollution reduction without affecting local businesses or land use. It also selects the most effective tree species based on climate and pollution absorption capacity.

2. **Predictive Analysis & Early Warnings:** The system forecasts high pollution days using real-time and historical AQI data, helping authorities take preventive measures.

3. **Anomaly Detection:** Detects sudden pollution spikes caused by traffic congestion, industrial emissions, or other factors, enabling quick action.

By integrating AI, predictive modelling, and environmental sustainability, this solution ensures effective decision-making, promotes green initiatives, and supports long-term air quality improvement.

Unique/Distinctive feature of the solution:

1. AI-Driven Tree Plantation Optimization
- Identifies the best locations for tree planting to maximize AQI reduction.
- Ensures no negative impact on local businesses and land use.
- Selects tree species based on pollution absorption capacity and local climate.

2. Predictive Air Quality Analysis
- Uses real-time and historical AQI data to forecast high pollution days.
- Provides early warnings for authorities to take preventive measures.

3. Anomaly Detection for Pollution Spikes
- Detects sudden increases in pollution due to traffic congestion or industrial emissions.
- Enables quick intervention to control unexpected pollution surges.

4. Industry-Specific AQI Tracking and Tailored Solutions
- Monitors **AQI levels in industrial zones** to identify high-pollution areas.
- Analyses **industry-specific emissions** and their impact on air quality.

5. Household Air Quality Improvement Solutions
- Provides **real-time indoor air quality monitoring** and personalized reports.
- Suggests **eco-friendly home solutions**, including air purifiers and indoor plants.

6. SaaS-Based Scalable Model
- Provides continuous monitoring and impact analysis.
- Ensures real-time data-driven decision-making for sustainable air quality management.

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Tools/Technology Uses:

1) Hardware Requirements:
   a) Processor: Inspiron 15 3000
   b) RAM: 8GB
   c) Storage: 512 GB
   d) Graphics Card: No Requirement
   e) Others: No Requirement

2) Software Requirements:

   a) Operating System: Windows OS.

   b) Development Tools: Visual Studio Code, Google Collab, Kaggle.

   c) Database: MySQL, Postgres

   d) Web Browser: Microsoft Edge, Brave

   e) Others: No Requirement

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(To be Filled by Faculty/Evaluator)

Proposal Evaluation:

1. Right Identification of the Problem (Appropriate selection of the problem)?
   a) Excellent   b) Good   c) Needs Improvement   d) Unacceptable

2. Relevance of the Solution (Adequately addressing the problem/need)?
   a) Excellent   b) Good   c) Needs Improvement   d) Unacceptable

3. Innovativeness in the Solution (Distinctive innovative components/features of the solution)?
   a) Excellent   b) Good   c) Needs Improvement   d) Unacceptable

4. Uniqueness of the Solution (Intellectual Property Component)?
   a) Excellent   b) Good   c) Needs Improvement   d) Unacceptable

Improvements/ Suggestions by the Evaluator:

1.

2.

3.

4.

Name of Faculty:

Designation: **Head of Department**

Signature with Date: **Signature with Date:**

Guidelines:

- One Proposal (Max length: 4 pages) per team will be submitted by the team leader only.
- A Team can have maximum 5 Members.
- For Heading font Size=14, Content font size =12, single spacing,Times New Roman type only.