



PARTICIPANT DETAILS

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PROBLEM DESCRIPTION

What is the problem that you want to solve and how is it relevant?

Example: The taxi services are currently very inefficient and overpriced. The current taxi services are disjointed which makes it difficult for the service providers and consumers to find each other easily.

Air pollution is the largest environmental and public health challenge in the world. The toxicity in the atmosphere leads to adverse effects on human health. Our project is designed to monitor the Air Quality of the Atmosphere.

IoT Based Air Quality Monitoring System using Arduino monitors the atmospheric toxicity level and processes data from which the rise in toxic level can be measured.

Who is currently facing this issue?

Example: Every commuter who doesn't have a personal vehicle, is in another city, traveling to the airport/railway station/bus stand. The taxi services are also equally affected due to the lack of connectivity with the customers.

Every living being is facing this issue and it is also giving rise to many atmospheric and health related problems.

How is the issue being addressed currently?

Prepaid taxi services at airports/railway stations/bus stands and ad-hoc taxi agencies. There also exist cab services that allow consumers to book taxis over the phone. However, this system lacks connectivity, standard rates and does not guarantee the taxi reaching you within the given time frame.

Ozone layer depleting gases are reduced as far as possible. Unnecessary burning of charcoal or plastic increases the Carbon level present in the atmosphere. However, it goes unchecked. Air purifiers are being installed to purify the air of a particular room but it does not reduce the toxic level of the atmosphere.

Competitors (if any)

Example:

- TaxiMagic
- Halio

- The global air quality monitoring (AQM) system

SOLUTION DESCRIPTION

What is your proposed solution?

Example: A mobile application which will make it easier for the user to book a cab in a matter of a few clicks. The user will be charged a fixed price calculated based on the distance and the time taken for the journey. The taxi drivers will also benefit as the selection of service and charging is not random. A driver will also need to activate his profile on the application, and he will be notified of the booking through the application along with the location and the shortest route to take.

Our project is on IoT based Air Quality Monitoring System using Arduino in which our system monitors the Air Quality over a webserver and triggers an alarm response when the quality reduces to a toxic level which indicates the presence of harmful gases. The Air Quality is displayed in PPM on the LCD as well as on the webpage.

How is your solution unique?

Example: The application uses mobile and GPS technology to match taxi drivers with passengers based on both availability and proximity. No need to install any hardware in the taxis and the application will take care of everything. No ambiguity in fare and service provided.

The system uses MQ135 Air Quality sensor to detect the presence of toxic gases. A statistical graph plotted with respect to time displays the rise or fall in toxic level in the atmosphere.

The graph helps to draw conclusions about the air quality.

Who is the target audience of the solution?

Example: Taxi commuters and taxi drivers. (your solution can be serving to a different crowd than the crowd facing the problem, i.e. your solution could be used by the Government or an agency/sector while the problem may be faced by the people).

The target audience are Researchers to analyse the processed data and take corrective and preventive steps accordingly.

On a scale of 1 to 5, how likely is your solution to succeed? (5 being the highest)

Our solution is likely to succeed on a scale of 5. We monitor the Air Quality to first understand its present toxic level and according to the data, right actions will be taken up.

Any additional information you would like to provide

The different components of the Air Quality Monitoring System are:

- ✓ Arduino Uno R3 microcontroller

It is based on ATmega328P which can be programmed according to the function where it is to be used. It is an open source microcontroller device with easily accessible software/hardware Platform and is compatible with many sensors available.

- ✓ ESP8266 Wi-Fi Module

The ESP8266 Wi-Fi Module is a self contained SOC with integrated IP protocol stack that can give any microcontroller access to any Wi-Fi network. Wi-Fi module is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor.

- ✓ MQ135 Gas Sensor

The Sensitive material used in MQ135 gas sensor is SnO_2 (Stannic Oxide). The conductivity of this material is lower in clean air. The sensor conductivity increases with the increasing concentration of target pollution gas.