

Global Application for Pollution and Weather Detection Using IoT Technology

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Abstract: A large number of vehicles routinely navigate through city streets; with on-board sensors, they can be transformed into a dynamic network that monitors the urban environment comprehensively and efficiently. In this paper, drive-by approaches are discussed as a form of mobile sensing, that over a number of advantages over more traditional sensing approaches. It is shown that the physical properties of the urban environment that can be captured using drive-by sensing include ambient fluid, electromagnetic, urban envelope, photonic, and acoustic properties, which comprise the feels classification. In addition, the spatiotemporal variations of these phenomena are discussed as well as their implications on discrete-time sampling. The mobility patterns of sensor-hosting vehicles play a major role in drive-by sensing. Vehicles with scheduled trajectories, e.g., buses, and those with less predictable mobility patterns, e.g., taxis, are investigated for sensing efficacy in terms of spatial and temporal coverage. City Scanner is a drive-by approach with a modular sensing architecture, which enables cost-effective mass data acquisition on a multitude of city features. The City Scanner framework follows a centralized IOT regime to generate a near real-time visualization of sensed data. The sensing platform was mounted on top of garbage trucks and collected drive-by data for eight months in Cambridge, MA, USA. Acquired data were streamed to the cloud for processing and subsequent analyses. Based on a real-world application, we discuss and show the potential of using drive-by approaches to collect environmental data in urban areas using a variety of non dedicated land vehicles to optimize data collection in terms of spatiotemporal coverage.

Keywords: Environmental monitoring, Mobile sensing, Mobility patterns, Road vehicles, Smart city, Spatiotemporal phenomena, Urban areas, Wireless Sensor Networks etc.

1. INTRODUCTION

The Internet of Things (IoT) is an emerging key technology for future industries, and environmental monitoring. The Internet of Things (IoTs) can be described as connecting everyday objects like smart-phones, Internet TVs, sensors and actuators to the Internet where the devices are intelligently linked together enabling new forms of communication between things and people, and between things themselves. Building IoTs has advanced significantly in the last couple of years since it has added a new dimension to the world of information and communication technologies.

1.1 Aim

Environmental monitoring is different in different situations, but important aims to environmental monitoring to find risks to human and wildlife, scope to population migration from high density areas to low density areas and to restrict emission of gases. Wireless sensor network (WSN) is a low cost, low power wireless network made up of thousands of smart sensor nodes which monitor physical or environmental conditions, such as temperature, pressure, moisture, etc. at different area or different location.

1.2 Objective

Pollution detection and regular monitoring is extremely significant errand in this day and age of in our existing world. To make a better and more secure condition for individual, creatures, and plants. We have to screen and control the contamination through the Internet of things innovation.

2. LITERATURE SURVEY

Paper 1: Embedded Solution for road condition monitoring using vehicular sensor network.

This customized system embedded device dedicated for monitoring of road surface using microphone and accelerometer sensors as well as collection of meteorological data for creation of detail road metrology maps.

Paper 2: Mobile air monitoring data processing strategies and effects on spatial air pollution trends.

Atmospheric Measurement Techniques. The mobile monitoring data collected on a road-way network in local emission plume detection, background estimation and averaging techniques for spatial trend analyses.

Paper 3: A low cost mobile sensing system for urban air quality monitoring.

In Computer Communications, IEEE INFOCOM 2016-The 35th Annual IEEE International Conference. We present in this year the design and implementation, and evolution of Mosaic, a low cost urban monitoring system based on mobile sensing.

Paper 4: High-resolution air pollution mapping with Google street view cars: Exploiting big data.

Environmental Science and Technology. Since local variation in air quality profoundly impacts public health and environmental equity, our results have important implications for how air pollution is measured and managed.

3. ARCHITECTURE:

3.1 Problem statement/Definition

Environmental monitoring is different in different situations, but important aims to environmental monitoring to find risks to human and wildlife, scope to population migration from high density areas to low density areas and to restrict emission of gases.

Wireless sensor network (WSN) is a low cost, low power wireless network made up of thousands of smart sensor nodes which monitor physical or environmental conditions, such as temperature, pressure, moisture, etc. at different area or different location.

3.2 Proposed Architecture

We are introducing a system system that allows user to extract meaningful information from a particular pdf, by using text characteristic algorithm. User has to upload the file into our system and system will get process on that file and give output to user.

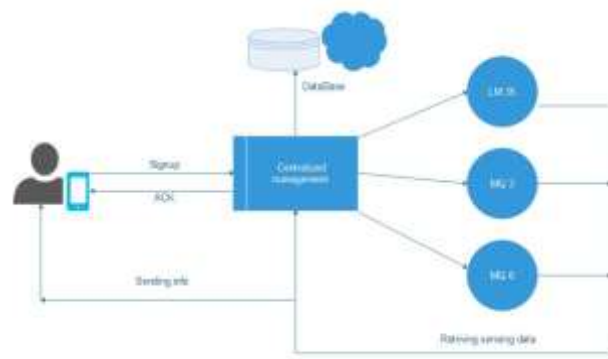


Fig -3.1: Proposed Architecture Diagram

4. CONCLUSIONS

Air quality monitoring systems are designed using different sensors for indoor and outdoor air quality monitoring in the previous works by using Bluetooth, GPS, GPRS wireless technologies. In a previous work WASP module is used which is costly. Instead of that different sensors can be used. Hence our system is overcoming the drawbacks of existing system, we are introducing a smart system that will monitor the city and allows user to check pollution level, temperature of different areas in city. Our system is cost effective and reliable.

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