1st International Workshop on Software Engineering Research & Practices for the Internet of Things (SERP4IoT 2019)

Title: IOT based Air Pollution Monitoring and Control Mechanism using UAVs

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Air pollution in India is a serious issue which is increasing rapidly and reaching to hazardous levels. One of the major sources being sulphur dioxide is emitted from the combustion of fossil fuels like coal and petroleum. Traffic congestion in India's most noticeable cities and towns is severe. It is caused due to increase in number of vehicles per kilometre of available road, chaos due to poor enforcement of traffic laws, obstacles in the road causing a blockage and merger etc. Complete lack of traffic sense in Indian public is the main reason for the chaos on the roads. Traffic congestion reduces the average traffic speed. At low speeds, it is scientifically proved that vehicles burn fuel inefficiently and pollute more per trip. In most of the highly congested Indian city roads, the average trip is less than 20 kilometres per hour. At such speeds, vehicles emit air pollutants 4 to 8 times more than they would, with less traffic congestion; and also consume a lot more carbon footprint fuel per trip than they would if the traffic congestion was less.

In context with the above issue in India, the present idea is to trace the vehicles which are emitting carbon dioxide (CO_2) and other hazardous pollutants beyond the permitted levels especially at the points of huge traffic congestion. The thermal sensors mounted on the Unmanned Aerial Vehicles (UAVs) or drones can be used to detect the vehicles that are emitting higher amount of pollutants (beyond threshold amount) and when detected should also snap an immediate picture of the vehicle registration number. The picture is then scanned using image scanning techniques and based on the registration number, the corresponding image will be uploaded into RTO website as evidence thereby updating the Government records. In parallel from the RTO website, the vehicle owner's details can be fetched. Email/phone number linked to any of the person's identification proof like that of Aadhar number/ PAN number or address linked to the registered number should be sent an E-mail/SMS/letter of the receipt of fine and asking them to get the vehicle repaired to emit lesser pollutants.

This system works with the assistance of the technology of Internet of Things (IOT) which is a rising technology based on the fusion of electronics and computer science. The embedded sensors in the system help to detect major air polluting gases such as CO_2, SO_2 and CO. The concept of IOT helps to access data from remote locations and save it in database so that we don't need to actually be present in that area. This would be a benefit to keep a constant check on pollution, in keeping the country greener and also to avoid corruption thereby saving a lot of money to the nation.

Keywords: Traffic congestion, Unmanned Aerial Vehicles, Internet of Things