Altitude: A Auadcopter UAV for Air Pollutants Identification and Measurement

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Air pollution levels in Medellin, the second largest city of Colombia, is a serious problem of public health. During last year, the city experienced the highest levels of pollution ever recorded which led to local authorities to declare a red alert and to advise locals stopping outdoor activities and thus, affecting people's quality of life. Having a constant record of the air quality can help local authorities to take timely tailored actions to improve it, not just in Medellin, but also at a larger scale in other cities of the word in which similar problems are being experienced. Currently, air pollution levels are recorded above-ground. Such measurements can be miss-leading due to, among others, differences between the land and the air temperatures. "Altitude" seeks for tackling this problem by providing a platform to perform constant measures of atmospheric gases in an accurate and effective way. We implemented aeronautical systems coupled to a variety of sensors to develop a quadcopter unmanned aerial vehicle (UAV) that records the quantity of an ample spectrum of air pollutants, such as carbon dioxide, carbon monoxide and atmospheric methane. The data generated is stored in an intern remotely piloted aircraft system (RPAS) which can be accessed upon the mission. So far, we have used our quadcopter UAV to monitor several locations in Medellin. We aim to pinpoint the places in which the accumulation of air pollutants is the highest, and therefore, where more health and environmental impact is expected to occur. Our data indicates that a rural area known as San Cristobal, presents the highest levels of air pollution with 2930 ppm of carbon dioxide. At this levels, people may experience headaches, sleepiness, poor concentration, among others health problems.

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