Use Of Aerial Drone Technology To Monitor Air Quality in Urban Communities

Ishmael, Omaree (School: Davis Aerospace)

The Researcher plans to investigate the use of drones for air quality sampling in urban areas to detect harmful pathogens or toxic gasses. With his background in aerospace engineering and drone piloting, the researcher aims to expand upon his previous work exploring drone functionality for traffic management and accident avoidance. The researcher's goal is to use drones as a multi-functional tool to address urgent environmental issues. This project aims to investigate the use of drone technology for collecting air quality data in urban communities. This study aims to identify the areas where different pollutants are most prevalent and to target efforts to reduce air pollution in those areas. The engineering goal is to modify a drone to collect air quality data in urban communities. Specifically, the researcher aims to design and produce a strip with a modified potassium iodide reagent that can detect evidence of ozone, sulfur dioxide, and nitrogen dioxide pollution in the air. The design criteria include collecting air quality data in urban areas, detecting ozone, nitrogen dioxide, and sulfur dioxide pollution, being easy to use and attach to the drone, and accessible and interpretable data collected. The prototype drone was successful in detecting high levels of ozone in multiple zip codes in the study area. However, further research and development is needed to expand the capabilities to detect other air pollutants, such as sulfur dioxide and nitrogen dioxide.

Awards Won: