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SMOKE DETECTOR DRONE

ABSTRACT

The quadcopter was first designed to achieve flight in a stable manner and to be used to monitor or collect data in a specific region such as mapping terrains. Technological advances have reduced the cost and increased the performance of the low power microcontrollers that have enabled the general public to develop their own quadcopters. The goal of this project is to build, modify, and make improvements in drone design to obtain stable flight, gather, detect or measure gasses like NH3, NOx, Alcohol, Benzene, Smoke, and CO2 and indicate the presence (and or) quantity with the help of an alarm. The project used a quadcopter that included a frame (that was 3D printed), motors, electronic speed controllers, an Arduino development board, and sensor boards. Batteries, a transmitter and a receiver were interfaced with the Quadcopter's frame. Individual components were tested and verified to be working properly. The PID controller was calibrated and tuned to obtain proper stabilization on each axis using custom PID test benches.

This report also described the auto-commands, and live video streaming that can be implemented at a later stage. Most of the goals in this project have been achieved, resulting in a stable and maneuverable drone. The primary aim of this project was to build and program a drone that can be used to collect smoke information of a surrounding area. A secondary goal of this project is to use this as a platform for future innovative projects that could include stabilization and image processing.