**Materials and Related Works: -**

The air monitoring drone is automated system smart drone that is designed to measure the air pollution data in a specific area. This drone will detect the live pollution of an area and the result will be shown by statistical graph. We are using Mission Planner which is a full-featured ground station application for the ArduPilot open source autopilot project. To count the number of people we are using OpenCV People Counter. This software will keep tracking the number of people.

**Arduino Uno R3**

Arduino Uno R3 is an open source hardware and software and very user friendly. We connected all the sensors with Arduino Uno R3 to send the data.

**DJI 2212 920KV Brushless Motor for Drone**

To spin the propellers DJI 2212 920KV Brushless Motor for Drone is used. These DC synchronous motors are supplied by Dc signal which produce AC signal to drive the motors**.**

**DJI F450 Frame**

The DJI F450 Flame Wheel frames are built from very strong materials, the arms are made from the ultra-strong PA66+30GF material which provides better resistance to damage on hard landings, while the main frame plates use a high strength compound PCB material, which makes wiring of ESCs and battery easy and safe on the lower of the two frame plates which is also the power distribution board.

**Electronic Speed Controllers (ESC)**

Electronic Speed Controllers (ESC) are used for varying the speed of electric motors. Four ESCs were connected to the onboard Lithium Polymer battery. Each ESC was connected to a motor.

**Global Positioning System (GPS)**

We used GPS- Neo-7 to track the drone position.

**Air pollution sensors**

**PM sensors**

In this drone PM sensors and gas sensors re used to detect the pollution. PM sensors re used to detect the dust particles in the atmosphere.PM2.5 is particulate matter with particle diameter up to 2.5 microns and is the most dangerous air pollutants. The PM sensor head has an in-built fan to ensure a stable and precise flow of sample air to the sensor. The sensor head also compensates for humidity by way of an on-board humidity sensor. In humid conditions light scattering sensors are likely to read high because moisture surrounds particles, causing them to appear ‘bigger’. The humidity compensation feature reduces this effect on the measurement.

**Gas sensors**

To take the measurements of the pollutant gas i.e. CO2, NOx, CO, SO2 MQ-2, MQ135, Mq-7 sensors are used. Each sensor will be calibrated daily and the automated drone will take the data hourly. These air pollutant sensors are manufactured to use in stable atmosphere.

**Drone systems**

The materials needed to build the drone are extremely complex composites. These materials are very lightweight and designed in such a manner that it absorbs the vibration produced which helps in decreasing the noises. The radar technology works behind the GNSS feature of the drone. The ground station remote controller receives signal through the radar regarding its flight. To implement a solution for air pollution monitoring using Drone technology, we must consider two main aspects. 1) Hardware configuration and 2) its control process. In our project we have designed our drone with multipurpose using different sensors. First, we thought in the context of Dhaka city. As the air of Dhaka is full of pollutant and we all know how many side effects it has, so our first step was to detect those pollutants from air, pollutants intensity of different area. We used GPS technology system so that our drone can perform automatically. Next step is to collect those data and analyses it. After analysing data, we would know and compare the values where there are more pollutants which caused different hazards. So, clean the air our motive is to use air filter. As a result, our drone can automatically filter the air from toxic elements. We will use “Hepa mini”, a small air filter device. This drone can be used for research purpose and study of air quality. We used DJIF450 Quadcopter frame to build drone.

**Drone monitoring and sensing**

Most important part of a Drone is monitoring and sensing capabilities. Our project involves multifunctional drone which is apparently a quadcopter. Quadcopter is a multi-rotor drone. Multi-rotor drones are used in aerial photography, aerial video inspection, for agricultural surveying, security purposes and many more. In our project we will monitor and take the data fro the sensors nd then