Indian Institute of Technology Kanpur

In response to IIT Bombay’s annual event Techfest 2018, IIT KANPUR is participating in Op. Rahat with full zeal . We aim to complete the task with a light weight and small drone. Our main aim will be to improve the level of precision with which we will be controlling the drone for obstacle avoidance and completion. For controlling the drone we aim to train ourselves in the best possible way we can by replicating the course which we wil be provided during the competition.

Our drone ‘Bummble Bee’ is a light weight drone with dimensions within the specified dimensions given in the rules. It is a quadcopter using 4 brushless D.C. motors , fitted with pixracer ,X8R receiver ,Power module ,buzzer ,switch electronic speed controller and a 2200 mAh battery .

For the payload delivery part of the project , we have installed a gripper remotely controlled using the transmitter . Using remote controlled actuator we will deliver the payload to the specified location.

**Image Processing Mechanism**

For Image processing we will be either using a camera with a wifi module that will get the image and transfer it to the ground station , after which we will use image processing techniques to extract the data out of the QR code or a software developed for android which will send processed data to ground station . We are using zbar and OpenCv library for image processing .

We discourage using led installed on the drone or onboard processing because as we earlier stated we want to keep the drone as light as possible . Light weight provides better and quick movements .

**Unique Selling point (USP)**

This drone can be used for object detection , object tracking because it don’t have an onboard computer so it is light weight and battery efficient . It can also be used for many things which can be accomplished through a gripper enabled drone.

Cost of this drone would be around 20k .

Various components and their cost :

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| Brushless D.C. Motor | 1000 |
| Electronic Speed Controller | 1200 |
| X8R Reciever | 6000 |
| Power Module | 1500 |
| Buzzer | 300 |
| Switch | 200 |
| Battery | 1000 |

Efficiency of Drone

Using the present electronics attached to our quadcopter it can easily carry a payload of 0.5 kg for 10 minutes . Without any payload it can fly for 15 to 20 minutes.

