Design:

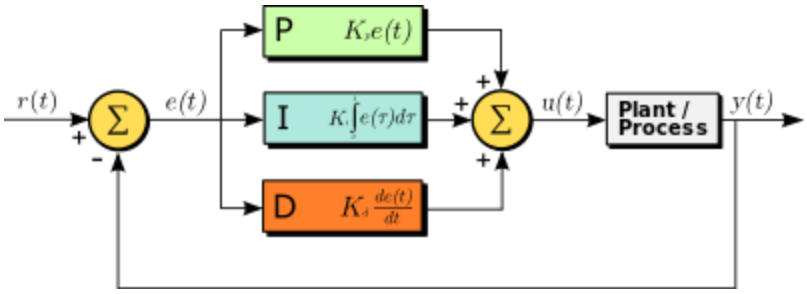
Batteries: We will be using a 3000MAh, 11.1 V, 3 cell LiPo battery which route power to the power distribution board, which further transfers it to the ESCs and the motors.

ESCs: We are using a 4 in 1 ESC which supply power to the motors by translating signals from the flight controller to electrical energy.

Motors : We are using 1000kv BLDC motors. Speed tuning of the motors is achieved through PID tuning of the ESCs.

Flight Controller: We are using a Pixhawk 2.4.8 flight controller in our quadcopter

PID - We will be implementing PID algorithm to control the quadcopter.



The block diagram on the above shows the principles of how the three control terms of proportional, integral and derivative are generated and applied. It shows a PID controller which continuously calculates an error value e(t) as the difference between a desired setpoint SP = e(t) and a measured process variable PV = y(t), and applies a correction based on proportional, integral and derivative terms. The controller attempts to minimize the error over time by adjustment of a control variable u(t), such as the opening of the control valve, to a control value, to a new value determined by a weighted sum of the control terms.

Our Idea :
The quadcopter will firstly detect the yellow line intersection using computer vision and then it will start to rise up till it detects a box, and will send the live footage to the onboard computer, where using computer vision it will classify the QR code , barcode and the hazardous sign and will try to fetch data from the footage, the drone will hover until the data is fetched from the codes. Once the data is fetched it will increase the counter of number of columns and will throttle up to the next row of boxes and will repeat the above process until the data is fetched.