Lab4: Teleoperation

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https://github.com/Robert1124/cse460

I. Height Control

One of our servos was weird and its angle is totally opposite, so we reinstalled that servos to make it turn a 180 degree. And then set both servos's default angle to 75 degree. We then send a desired height of 3m.

After modifing the python code, we implemented P-control, and PD-control in Bicopter2altitude.ino.

```
float P_control(float desired_height, float estimatedZ, float kpz){
  float control_input = kpz * (desired_height - estimatedZ);
    if(control_input < 0){
      control_input = 0;
    }
    return control_input;
}


float PD_control(float desired_height, float estimatedZ, float estimatedVZ,float kpz,float kdz){
  float desiredVZ = 0.0;
  float control_input = kpz*(desired_height - estimatedZ) + kdz * (desiredVZ - estimatedVZ);
  if(control_input < 0){
      control_input = 0;
  }
  return control_input;
}
```

The P-control brought some oscillations when it reached the desired height at first, and with time pass, the oscillation became smaller and smaller. However, the PD-control made the oscillation almost disappear. There was only a little bit oscillation when it reached the desired height and became stable almost immediately.

Here's the link for the video:

https://youtu.be/HySOxNkDA6Y

Since the high bay lab was occupied, we were not allowed to fly through the square again.