Sunday UAV Quiz

4th February, 2024

Note:
Those who have missed/want to retake quiz for compensating for marks of earlier quiz and assignments, can opt for this. This is the final chance before your names are shortlisted.

- 20 Marks
- Handmade notes preferred
- Concise answers, no verbosity, use single sentences where necessary
- More credit for diagrams, maths and equations.
- 3 hrs. (4th Feb, 9Pm to tth Feb, 12AM)

Q1. The quadcopter achieves hovering by balancing the thrust to cancel out its acting weight, while directional thrust induces movement, and a reduction in overall thrust results in a decrease in the drone's altitude.

- What is the setup of the four rotors for a stable fight? What if all the rotors were to spin in the same direction?
- What is the change in thrust of rotors for take off, hover, roll right, and pitch up?
- How many degrees of freedom does a quadcopter has? Show.
- What are the rules that determine rotaioal movement?
- Write the equations of translational motion?
- Fill the following table.

Lift Produced (N)				Vertical Movement (None, Up, or Down)	Lateral Movement (None, Right, Left, Forward, or Backward)	Rotational Movement (None, Clockwise, or Counterclockwise)
Propeller 1	Propeller 2	Propeller 3	Propeller 4			
1.25	1.25	1.25	1.25			
1.2	1.2	0.8	0.8			
0.25	0.25	0.5	0.5			
1	1.5	1	1.5			
1.5	0.5	1.25	0.75			
0.5		0.5				
2	1	1	1			
0.25	1	1	0.25			

Answers Format
Supply in asingle PDF, named as [last_name]_[first_name]_UAVRequiz.pdf