Basic Drones Dynamics

DASL 106

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DASL

Drones and Autonomous Systems Lab @ UNLV

Contents : Week 2

- Rotor Response – Hover
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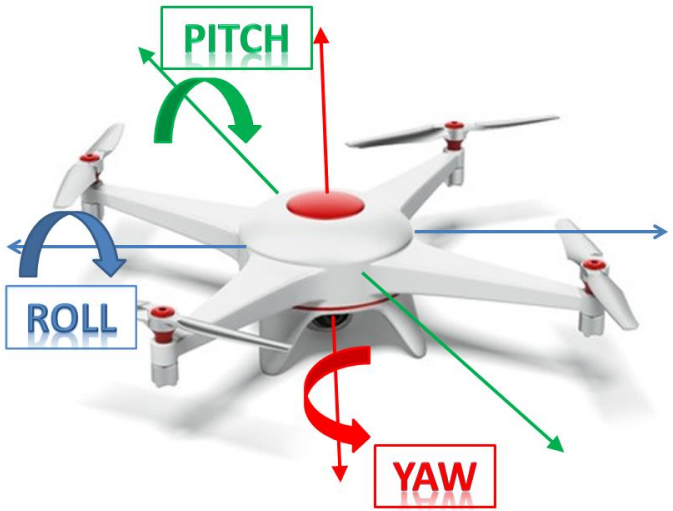
Rotor Resposne – Hover



- Hover.

1. All the motors rotate at the same speed.

2, The rotation speed must be sufficient enough for the quadcopter t o generate a 'lift' counteracting its own weight, but not so much that the quadcopter keeps climbing in altitude

3. The torque effect acting on the body of the quadcopter by each of the motors should be cancelled out.

- Experience with LegoFlybrix.

-R/C signal response check

-Motor response.

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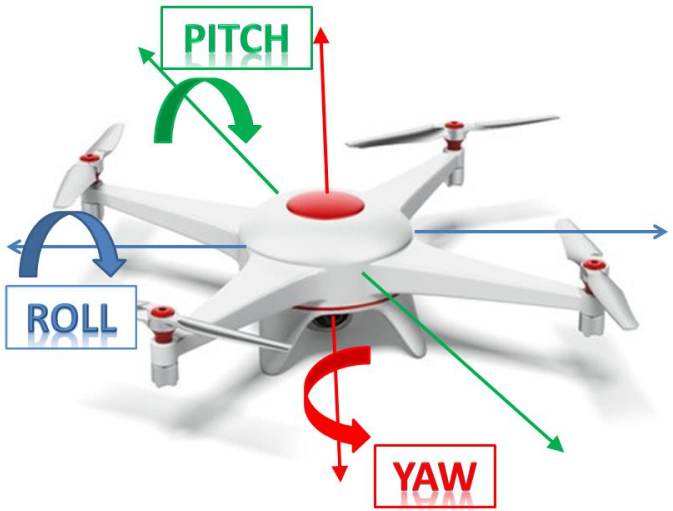
Rotor Resposne – Roll



- Roll.

1. Move to side to side
2, To the left : the speed of the right of the quadcopter should increa se relatively.
3. To the right : the speed of the left of the quad copter should incre ase relatively

- Experience with LegoFlybrix.

-R/C signal response check
-Motor response.

Ref. daslhub.org

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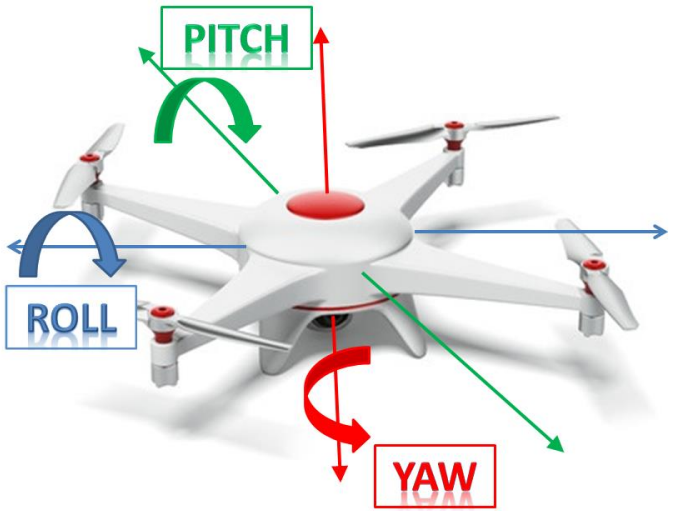
Rotor Resposne – Pitch



- Pitch

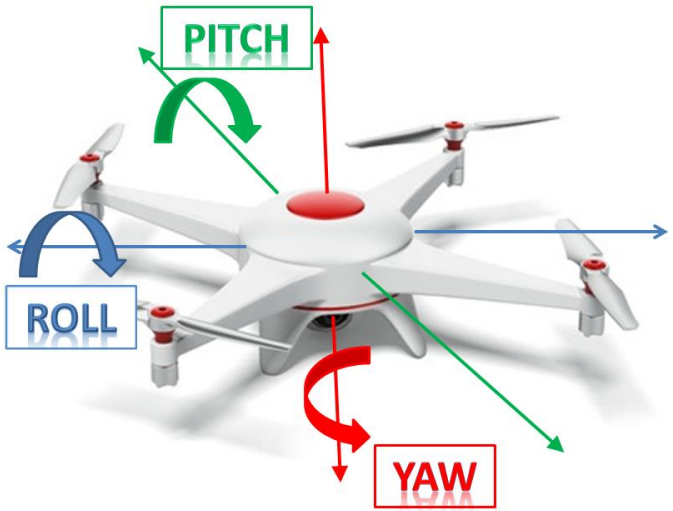
1. Fly forward or backward (Nose up or down)
2, To forward : The speed of rotors at the rear must increase.
3. To backward : The speed of rotors on the front must increase
4. The speed of rotors one side increase, another side decrease

- Experience with LegoFlybrix.

-R/C signal response check
-Motor response.

Ref. DroneRace.tech, IHS Engineering and Robotics

Rotor Resposne - Yaw



- Yaw

1. Rotation movement by torques.

2, To the clockwise : the rotors with counter-clockwise propellers ro tate relatively faster than others.

3. To the counterclockwise : the rotors with clockwise propellers ro tate relatively faster than others.

- Experience with LegoFlybrix.

-R/C signal response check

-Motor response.

Ref. RcFair

Homework

- Report Rotor response of 3 movement with Graph.