DRAFT Lab – Workshop

DRAFT

DRones Autonomous Flight Team

Tello Introduction

1859

Agenda

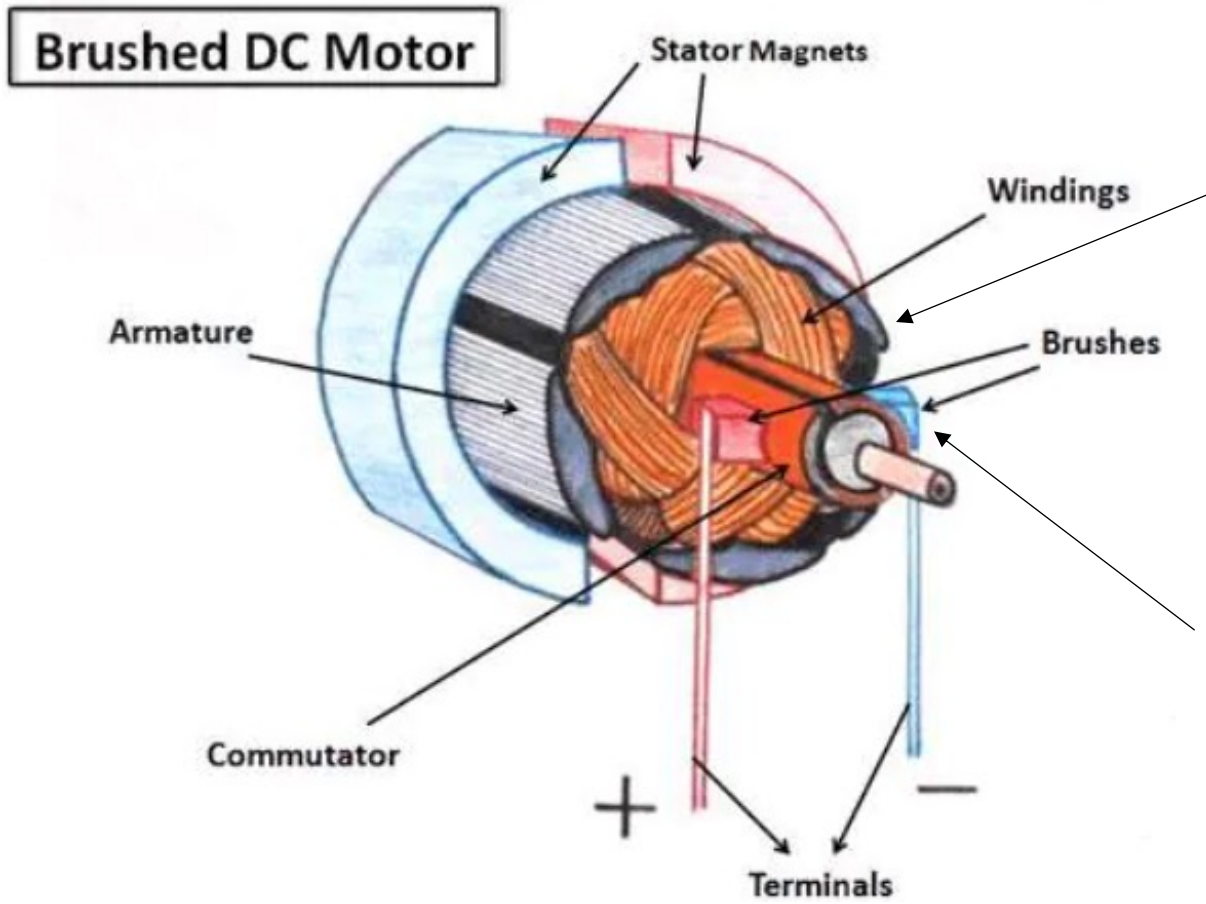
- **Motors**
- **Sensors**
- **APIs – Application Programming Interface**
- **Tello App**

Motors 1/2

Architecture

- CW and CCW (clockwise and counterclockwise) for stability and maneuverability

Motors 2/2



When the motor turns, the current flow path between the source, brushes, commutator plates and two motor coils (windings) automatically switches every half turn

A pair of brushes placed at 180 ° from each other on the motor casing directs the current applied to the armature coils through two contacts of the commutator (plates); each of the plates covers nearly 180 ° of the armor.

Sensors 1/3

Infrared sensors

- Two sensors: one transmitter and a receiver.
- There are (IR) LEDs with "black" light (for humans invisible) and "dark glowing" light.

Sensors 2/2

Camera and IMU

Camera properties:

- Photo: 5MP (2592x1936)
- FOV: 82.6°
- Video: HD720P30
- Format: JPG(Photo); MP4(Video)
- EIS: Yes

IMU - Inertial Meaurement Unit: This sensor is used to keep the drone stable during operations.

APIs – Application Programming Interface

Python and ROS

The drone can be controlloed with the APIs for Python and ROS.

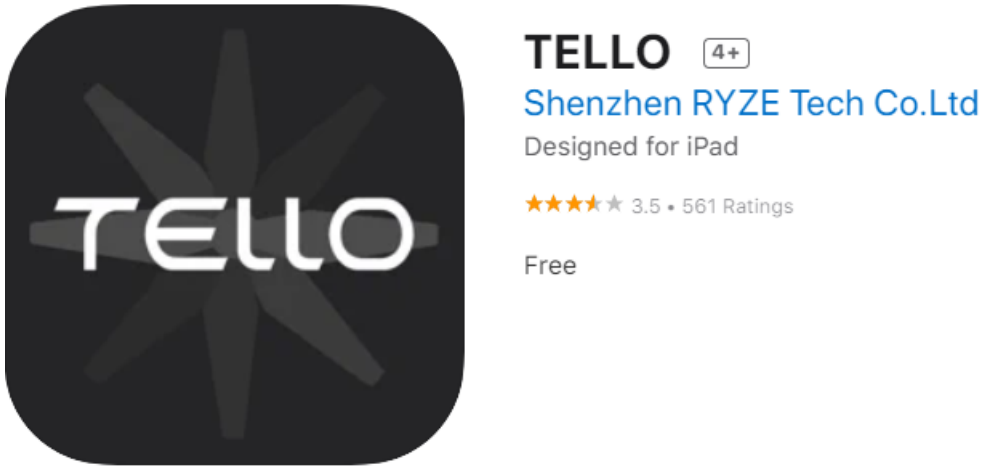
- These APIs allow to use code to command the drone taking care of the low level control.
- Such commands can be then chained together to create a more complex sequence of tasks.
- Additionally it is possible to stream relevant data from the drone like speed, battery, wifi connection and camera feed.

```
def recv():
    count = 0
    while True:
        try:
            data, server = sock.recvfrom(1518)
            print(data.decode(encoding="utf-8"))
        except Exception:
            print ('\nExit . . .\n')
            break


print ('\r\n\r\nTello Python3 Demo.\r\n')

print ('Tello: command takeoff land flip forward back left right \r\n       up down cw ccw speed speed?\r\n')

print ('end -- quit demo.\r\n')


#recvThread create
recvThread = threading.Thread(target=recv)
recvThread.start()
```

Tello APP 1/2

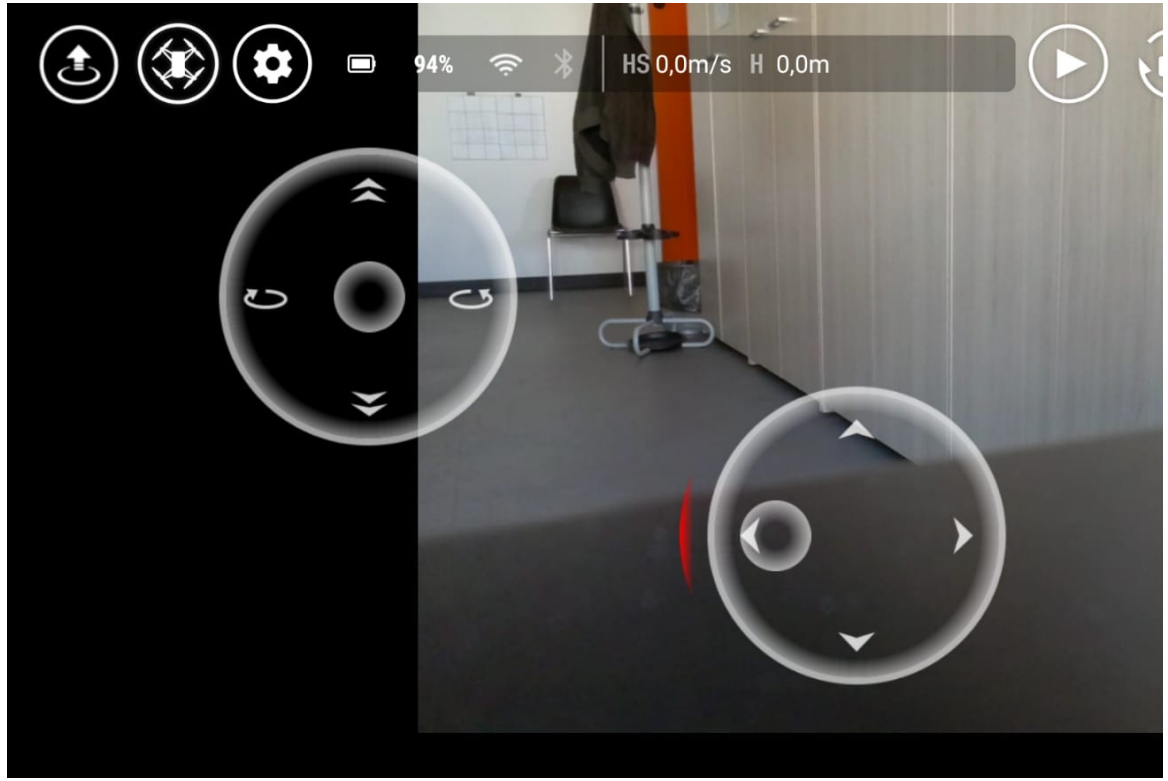
How to use?

- Turn ON the drone
- Connect to the Tello-XXXXXX network (wi-fi)
- Open the Tello APP
- Check that the Tello camera is streaming on the phone



NOTE: You might experience problems with the Android version of the app. In these cases use Tello APK v1.1.1

Tello APP 2/2



DRAFT

Thank you for your attention.