Tello SDK를 이용한 파이썬 코딩(1)

DJITelloPy 모듈

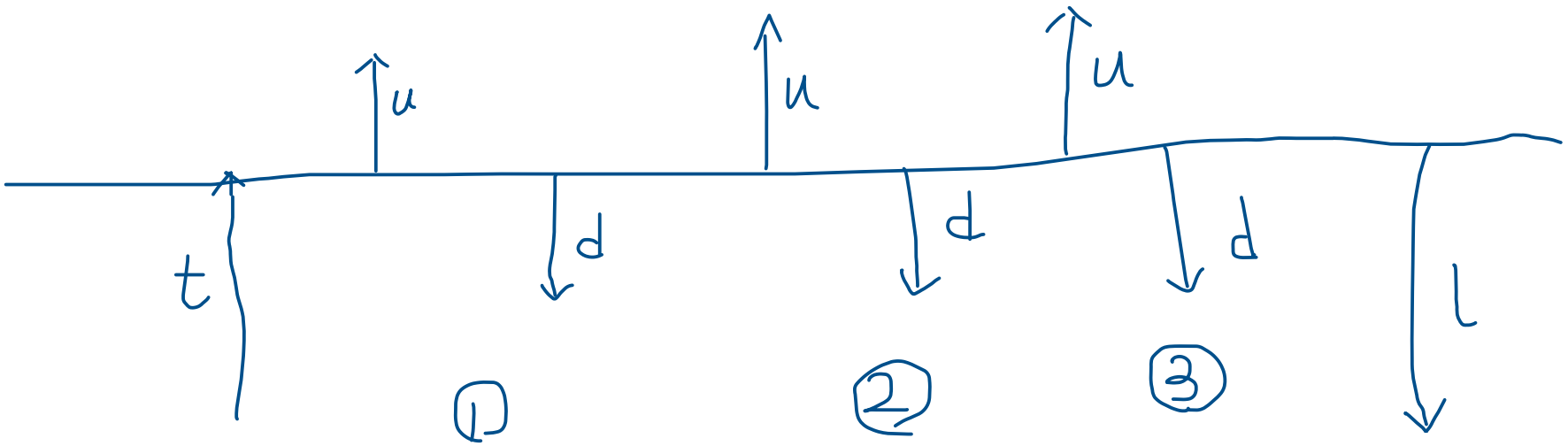
- API : https://djitellopy.readthedocs.io/en/latest/tello/
- DJITelloPy 모듈 설치
  - 터미널
    - pip install djitellopy
  - 파이참
    - [setting]->[Project]->[Python Interpreter] -> + 'djitellopy'

기본 동작 제어

- takeoff/ land
  - **`takeoff(), land()`**
- move up/ down
  - **`move_up(), move_down()`**
- move left/ right
  - **`move_left(), move_right()`**
- rotate_cw_ccw
  - **`rotate_clockwise(), rotate_counter_clockwise()`**
- send_rc_control_async
  - **`send_rc_control(self, left_right_velocity, forward_backward_velocity, up_down_velocity, yaw_velocity)`**

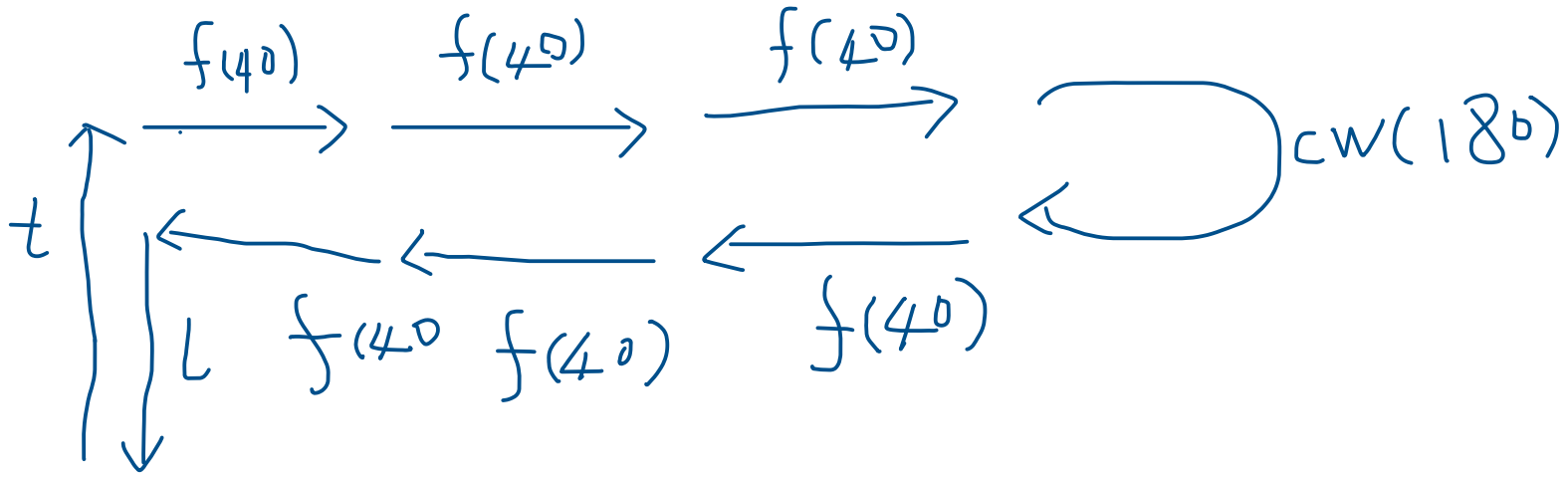
실습 01

- takeoff -> 3회 up(40) -> down(40) 반복 -> landing



실습 02

- takeoff -> fwd(40) -> fwd(40) -> fwd(40) -> cw(180) -> fwd(40) -> fwd(40) -> fwd(40) -> land



드론 사진 촬영하기

```
import cv2
from djitellopy import Tello

tello = Tello()
tello.connect()

tello.streamon()
frame_read = tello.get_frame_read()

tello.takeoff()
cv2.imwrite("picture.png", frame_read.frame)

tello.land()
```

드론 비디오 촬영, 전송

```
from djitellopy import tello
import cv2
import time

tello = tello.Tello()
tello.connect()

battery_level = tello.get_battery()
print(f"Battery Life Percentage: {battery_level}")

time.sleep(2)

print("Turn Video Stream On")
tello.streamon()

# read a single image from the Tello video feed
print("Read Tello Image")
frame_read = tello.get_frame_read()
print(type(frame_read))

time.sleep(2)
```

```
while True:
    # read a single image from the Tello video feed
    print("Read Tello Image")

    tello_video_image = frame_read.frame

    # use opencv to write image
    if tello_video_image is not None:
        cv2.imshow("TelloVideo", tello_video_image)

    if cv2.waitKey(1) & 0xFF == ord('q'):
        break

tello.streamoff()
cv2.destroyWindow('TelloVideo')
cv2.destroyAllWindows()
```

키보드 제어하기

- manual-control-opencv

```
from djitellopy import Tello
import cv2, math, time

tello = Tello()
tello.connect()

tello.streamon()
frame_read = tello.get_frame_read()
```

```
while True:
    img = frame_read.frame
    cv2.imshow("drone", img)

    key = cv2.waitKey(1) & 0xff
    if key == 27: # ESC
        break
    elif key == ord('t'):
        tello.takeoff()
    elif key == ord('w'):
        tello.move_forward(30)
    elif key == ord('s'):
        tello.move_back(30)
    elif key == ord('a'):
        tello.move_left(30)
    elif key == ord('d'):
        tello.move_right(30)
    elif key == ord('e'):
        tello.rotate_clockwise(30)
    elif key == ord('q'):
        tello.rotate_counter_clockwise(30)
    elif key == ord('r'):
        tello.move_up(30)
    elif key == ord('f'):
        tello.move_down(30)

tello.land()
cv2.destroyAllWindows()
```