

MINI-DRONE

자율비행 경진대회

TELLO – 드론 카메라 활용

드론 카메라 이미지 받아오기

드론 카메라 이미지 받아오기 1) MATLAB으로 드론 카메라와 연결 : camera()

camera

Connection to Ryze drone's camera

Description

This object represents a connection to the Ryze[®] drone camera. To acquire images from the Ryze drone camera, use this object with the functions listed in [Object Functions](#).

Creation

Syntax

```
cameraObj = camera(droneObj)  
cameraObj = camera(droneObj,Name)
```

Description

`cameraObj = camera(droneObj)` creates a camera object that connects to the camera of the Ryze Tello drone, represented by `droneObj`.

`cameraObj = camera(droneObj,Name)` creates a camera object that connects to the specified camera of the Ryze Tello drone, represented by `droneObj`.

드론 카메라 이미지 받아오기 1) MATLAB으로 드론 카메라와 연결 : camera()

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드론 카메라 이미지 받아오기

1) MATLAB으로 드론 카메라와 연결: `camera()`

Examples

[collapse all](#)

▼ Create Camera Object

Connect to a Ryze Tello drone.

```
droneObj = ryze()
```

```
droneObj =  
    ryze tello with properties:
```

```
        Name: "Tello"
```

```
        ID: "TELLO-D2B07B"
```

```
        State: "landed"
```

```
    BatteryLevel: 50%
```

```
    AvailableCameras: ["FPV"]
```

Connect to the drone's camera using the camera object.

```
cameraObj = camera(droneObj);
```

```
cameraObj =  
    Camera with properties:
```

```
        Name: "FPV"
```

```
    Resolution: "720x960"
```

▼ Create Specified Camera Object

Connect to a Ryze Tello drone.

```
droneObj = ryze()
```

```
droneObj =  
    ryze tello with properties:
```

```
        Name: "Tello"
```

```
        ID: "TELLO-D2B07B"
```

```
        State: "landed"
```

```
    BatteryLevel: 50%
```

```
    AvailableCameras: ["FPV"]
```

Connect to the drone's camera using the camera object.

```
cameraObj = camera(droneObj, 'FPV');
```

```
cameraObj =  
    Camera with properties:
```

```
        Name: "FPV"
```

```
    Resolution: "720x960"
```

드론 카메라 이미지 받아오기 2) 드론 카메라에서 실시간 영상 받아오기: `preview()`

preview

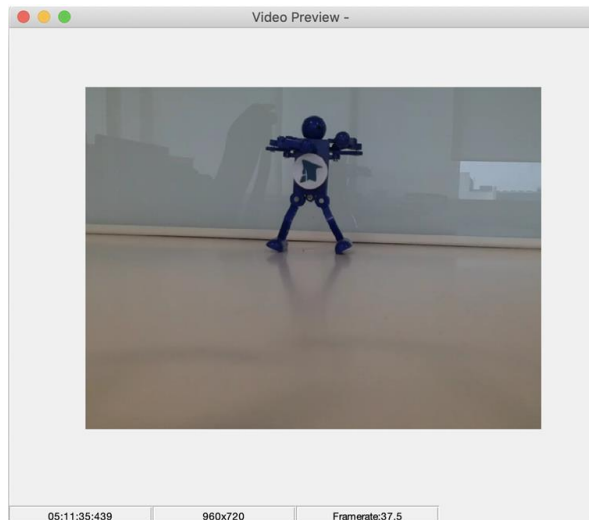
Preview live video data from Ryze drone camera

Syntax

```
preview(cameraObj)
```

Description

`preview(cameraObj)` creates a preview window that displays live video data from a Ryze® drone camera object, represented as `cameraObj`. The preview window also displays the camera URL, resolution, frame rate, and timestamp.



Examples

Preview FPV Camera Image

Connect to a Ryze Tello drone.

```
droneObj = ryze()
```

```
droneObj =  
    ryze tello with properties:
```

Name: "Tello"

ID: "TELLO-D2B07B"

State: "landed"

BatteryLevel: 50%

AvailableCameras: ["FPV"]

Connect to the drone's camera using the camera object.

```
cameraObj = camera(droneObj);
```

```
cameraObj =  
    Camera with properties:
```

Name: "FPV"

Resolution: "720x960"

Start preview of the video stream from the drone's camera

```
preview(cameraObj)
```

드론 카메라 이미지 받아오기 2) 드론 카메라에서 실시간 영상 받아오기: `closePreview()`

closePreview

Close Ryze drone camera preview window

CO

Syntax

```
closePreview(cameraObj)
```

Description

`closePreview(cameraObj)` closes the preview window of the Ryze[®] drone camera, specified as `cameraObj`. You can close the preview at any time using the `closePreview` function. If you do not explicitly close the preview, it closes when you clear the camera object.

Examples

[collapse all](#)

Close FPV Camera Preview

Connect to a Ryze Tello drone.

```
droneObj = ryze()
```

```
droneObj =  
    ryze tello with properties:
```

```
        Name: "Tello"
```

```
        ID: "TELLO-D2B07B"
```

```
        State: "landed"
```

```
        BatteryLevel: 50%
```

```
        AvailableCameras: ["FPV"]
```

Connect to the drone camera using the camera object.

```
cameraObj = camera(droneObj);
```

```
cameraObj =  
    Camera with properties:
```

```
        Name: "FPV"
```

```
        Resolution: "720x960"
```

```
preview(cameraObj)
```

Preview video from the camera

```
preview(cameraObj);
```

The preview window opens and displays live video stream from your camera. The lower portion of the window shows the timestamp in seconds, resolution, and frame rate in frames per second.

Close the preview

```
closePreview(cameraObj);
```

드론 카메라 이미지 받아오기

3) 드론 카메라에서 이미지 프레임 받아오기: `snapshot()`

snapshot

Acquire single image frame from Ryze drone camera

R2020a

[collapse all in page](#)

Syntax

```
frame = snapshot(cameraObj)
[frame,ts] = snapshot(cameraObj)
```

Description

`frame = snapshot(cameraObj)` returns a single image from the drone camera object, specified as `cameraObj`. Calling `snapshot` in a loop returns a new frame for each iteration of the loop.

[example](#)

`[frame,ts] = snapshot(cameraObj)` acquires a single image from the drone camera object, specified as `cameraObj`, assigns it to the variable `frame`, and returns the timestamp `ts`.

[example](#)

Examples

[collapse all](#)

▼ Capture Image from FPV camera

Connect to a Ryze® Tello drone.

```
droneObj = ryze()
```

```
droneObj =  
    ryze tello with properties:  
  
        Name: "Tello"  
        ID: "TELLO-D2807B"  
        State: "landed"  
        BatteryLevel: 50%  
        AvailableCameras: ["FPV"]
```

Connect to the drone's camera using the camera object.

```
cameraObj = camera(droneObj);
```

```
cameraObj =  
    Camera with properties:  
  
        Name: "FPV"  
        Resolution: "720x960"
```

Capture an image from the drone's camera

```
frame = snapshot(cameraObj);
```


드론 카메라 이미지 받아오기

3) 드론 카메라에서 이미지 프레임 받아오기: `snapshot()`

▼ Acquire One Image Frame and Timestamp from Drone's Camera

Connect to a Ryze Tello drone.

```
droneObj = ryze()
```

```
droneObj =  
    ryze tello with properties:  
  
        Name: "Tello"  
        ID: "TELLO-D2B07B"  
        State: "landed"  
        BatteryLevel: 50%  
        AvailableCameras: ["FPV"]
```

Connect to the drone's camera using the camera object.

```
cameraObj = camera(droneObj);
```

```
cameraObj =  
    Camera with properties:  
  
        Name: "FPV"  
        Resolution: "720x960"
```

Capture an image from the drone camera and assign it to frame, acquire the timestamp, and assign it to ts

```
[frame,ts] = snapshot(cameraObj);
```

Display the acquired image

```
imshow(frame)
```

Display the timestamp of the snapshot

```
ts
```

```
time =  
    datetime  
    15-Aug-2019 14:07:19
```

시연 코드

시연 코드

드론 카메라에서 실시간 영상 받아오기: `preview()`

```
control_with_snapshot.m  control_with_preview.m  +
1
2 -   droneObj = ryze();
3 -   drone_cam = camera(droneObj);
4
5 -   preview(drone_cam);
6
7 -   takeoff(droneObj);
8 -   pause(3);
9
10 -  moveup(droneObj, 2);
11 -  pause(3);
12
13 -  land(droneObj);
14
15 -  closePreview(drone_cam);
```

시연 코드

드론 카메라에서 이미지 프레임 받아오기: `snapshot()`

```
control_with_snapshot.m x +
1
2 -   droneObj = ryze();
3 -   drone_cam = camera(droneObj);
4
5 -   takeoff(droneObj);
6 -   pause(3);
7 -   [frame, ts] = snapshot(drone_cam);
8
9 -   for i = 1:2
10 -       pause(1);
11 -       disp(ts);
12 -       imshow(frame);
13 -       pause(1);
14 -       turn(droneObj, deg2rad(90));
15 -       pause(3);
16 -       [frame, ts] = snapshot(drone_cam);
17 -   end
18
19 -   pause(1);
20 -   disp(ts);
21 -   imshow(frame);
22 -   pause(1);
23 -   land(droneObj);
```

강의 요약

강의 요약

◆ 드론 카메라 실시간 영상 및 이미지 받아오기

MATLAB으로 드론 카메라와 연결	카메라 객체 선언	<code>camera()</code>
드론 카메라에서 실시간 영상 받아오기	실시간 영상 ON	<code>preview()</code>
	실시간 영상 OFF	<code>closePreview()</code>
드론 카메라에서 이미지 프레임 받아오기	이미지 프레임 받기	<code>snapshot()</code>