**Documentation & Read Me**

The uploaded zip contains the project source codes and a command line executable file allowing users to use the proposed tracing method to trace their own animal movement videos. The language version used for codes is python 3.8.5 on macOS version 10.15.7 (19H2).

**threshold\_tracing.py:** The threshold-based tracing module

**camshift\_tracing.py:** The camshift-based tracing module

**evaluation.py:** The performance evluation/comparision codes

**trace.py:** User command line executable file, use this as a tool to generate your own trajectory tracing output in a png

**Vedio\_to\_tiff.py:** used to convert mp4 vedio into tiff fomart for FIJI tracing

**File for comparison Folder**: ground truth and FIJI tracing result for black\_1\_short.mp4

**Result of the test code:** some results running test videos.

**Overview of the essential package used**

matplotlib 3.3.2 scikit-image 0.17.2. numpy 1.20.3 pandas 1.1.3

**Getting Started**

**1.unzip the zip in a directory**

mkdir code\_test

cd code\_test

unzip code\_package.zip

**2.Run the command line (e.g Mice\_short.mp4)**

#to use thresholding tracing method

python3 trace.py -i Mice\_short.mp4 -t True -o outputfilename

#to use Camshift tracing methods (e.g black\_1\_short.mp4)

python3 trace.py -i black\_1\_short.mp4 -cs True -o outputfilename

**3.Get the tracing result!**

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**Specification of the parameter:**

**Common parameters:**

input -i: refers to the path of video to be traced

output -o: defines the name of the trajectory png output

**Parameter for thresholding-based module:**

threshold -t: is defaulted to be None. To use the thresholding-based tracing method, it value should be set as True.

color -col: refers to target color and defaulted to be “black” to control the pixel value inversion.

thresh1 -t1: is defaulted as 220 based on trial. Lower limit.

thresh2 -t2: is defaulted as 255 based on trial. Upper limit.

The pixel has the value between thresh1 and tresh2 would be considered as target region.

**Parameter for Camshift-based module:**

camshift -cs: is defaulted to be None. To use the camshift-based tracing method, it value should be set as True.

column, row, height, weight (-c, -r, -ht, -w): the four parameters together define the location of initial region of interest, that is the location of targets. They are defaulted to trace black\_1\_short.mp4

To quit the track video, you can press Q on the keyboard.

图片包含 室内, 小, 冰箱, 男人

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