Overall Workflow for OF Video Recording and Data Analysis

Project: Open Field
Authors: Tim Yeh
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Raspberry pi through VNC viewer
-the username and the password for the raspberry pi inside the OF test room are pi and iamsolazy123!
-use the python script called "video recording.py" for video recording
-all the files should be stored inside the folders on desktop (Still for background images and Videos for videos)
-the files can be transferred to engram once login from the terminal
-all .h264 files are stored inside a folder called "videos" under "Tim" (/bendesky-locker/Tim)

on your own PC
-run "**MP4Box.py**" under "Tim" using ipython from the terminal (this is going to change .h264 files to mp4 with 25 fps by default)
-use quicktime player to split the videos into only light phase and only dark phase for tracking (exclude the transition parts)
-use only the edited videos (not the original) for tracking and they should be named with the same name as the original videos except the part with _light or_dark. That part is to reflect which background should the tracking script use

for example,
20180706_PO_F_422__9_dark.h264.mp4 (58 min)
20180706_PO_F_422__9_light.h264.mp4 (13 min)
are edited from 20180706_PO_F_422__9_dark.h264.mp4 (72 min)

Habanero
-upload the videos to Habanero under "OF" (/zi/users/######/Tracking/OF/)
-upload the background images to "backgroundImage" folder under OF
-upload all the tracking scripts under "Tracking"

sometimes some videos are going to have issues that require some specific modifications such as excluding a hole, bedding, time stamp. It would be better to have a new tracking script(with overall similar content, but a different name) for each animal to test out the tracking script on PC, making sure nothing is wrong with the videos and the tracking script before uploading to Habanero

-1 hr video roughly takes about 1 hr to track on Habanero
-remember to set the tracking script to sinlge = FALSE and multiple = TRUE
-each tracking script should only track the videos with the name matches the one indicated in the last couple lines of the tracking script *fnmatch()

-after setting up all the tracking scripts under "Tracking" and videos under "OF", run "batch.py" to submit all the scripts with the name tracking*
-all the raw data are stored in the "data" folder (/OF/data)
-the raw data are transferred from Habanero to PC (need to make sure the quality of the tracking by reading the first couple lines of the results) *Sometimes no contour could be very high but no obvious problems

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combine frames and split into hr by hr

-use "**gather_OF_data.py**" to combine and separate the data into light_before (1hr), dark (8hr), light_after (1hr) -> store under /OF/results

-use "**split_OF_data.py**" to split 8hr dark data from gather_OF into 8 segments of data to synchronize the start of the dark phase -> store under /OF/results/splitted

get processed data(all these scripts need to be in the same folder as the raw data)

-use "**distance_travelled.py**" to calculate the total distance travelled -> store under /OF/results/distance

-use "**nearest_wall.py**" to get distance to the nearest wall frame by frame -> store under OF/results/nearest_wall

-use "**OF_data_analysis.py**" to get the proportion of time spent in different locations -> store under /OF/results/analysis

-move all the processed data to the "analysis" folder manually

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plot the data using R

-main.R is for plotting the proportion of time spent in different locations; total distance travelled; EPM and OF correlations

-hist_distr_nearest_wall.R is for plotting the nearest wall data