Path Integration program instructions

Stages 1 to X are best done when you have a load of avis from a particular set up but it can also be done in batches easily enough. Also, note ‘frame’ is an individual image taken from a video.

1. Generate the individual avis from iPiRecorder via export. Choose no compression and note from this what the start and end frames are for each of the sub films

If this is to be put into a spreadsheet, the best way would be to have 3 columns: name of file, start frame and end frame. This could then be read in automatically later (see stage 2a)

Try and be consistent with the labelling of the films but it’s not too important

2. Demarcate the channel that is being used and get the scaling etc from the ruler.

You run this by typing:

>> ChancoordsAll

This gets the coordinates of things you need for all the avi files in the folder you are currently in (in matlab, you’ll need to move to the folder with all the avi’s in). It generates new files which are of the form avifilenameNestLMData.mat

This proceeds in several stages

1. Check the start and end frames. This function prompts you to enter the start and the end frames ie the frames before and after you want to start tracking. Apart from when it’s leaving the pot, this means there will be no ant in the image shown. You don’t have to get this exactly right ie the end frame being *exactly* the frame after the ant exits – it simply means there will be a few frames with no ant at the end which is fine.
2. Mark the channel, ruler and pot. This can be done either by initialising from a previously marked film or by starting anew.

**Initialising from previous film:** the program lists all the processed files. Pick the number to initialise from or just return to initialise anew. You can adjust points in the next stage. I want to add the facility to add or remove the pot at this point, but in the current version, if you initialise from a film that doesn’t have a pot in it, you’ll have to ctrl+c out of the program and restart

**Initialise anew:** The program then prompts you to click on the ends of the channel, then the ruler and finally the pot. For channel you click each side of the channel (the program forces the lines to be at either end of the image); for ruler the two tape marks; For each point, when you first click, the program zooms in and lets you adjust it. Press return when done. For the pot, click 2 sets of 2 points on opposite sides of the pot (eg top and bottom, left then right) and then return. If there is no pot, just click return

1. Adjust the points: To adjust the points, click near any end of a line or the pot (if present). The program will move the nearest end of a line to that point and you can keep clicking till it’s good. If the pot is the nearest point, the prog allows you to move the centre of the pot either by clicking in the image or by using the up/down/left/right cursors. To decrease or increase the width of the pot, you use [ and ] respectively.

You can do processing in batches; the program will skip over any avis that already have a …NestLMData.mat file. So you can eg just add more avis to the folder you are processing as you generate more (but if camera position has changed they won’t be much use as you can’t initialise from them).

NB at present the compass is generated from the tape marks. This can be easily changed

3. Generate mat files of the frames you need for each film. This generates mat files with just the relevant portion of the frames needed and so are much smaller than the massive avis and quicker to process. To do this, run the program:

>> AvisToMatsPathInt; antcoords

This will take quite a while to run so you might want to eg run it over night when you’ve stopped initialising the files. The program generates a folder for each avi file, with one mat file for each frame of the film. From this point, the avi’s shouldn’t be needed (but keep them at least initiallu in case I’ve messed up!)

4. Run the tracking program. This generates a avifilenamProg.mat file for each avi which has the tracked ant position. This is run via:

>> antcoords

It then processes any files that have …NestLmData.mat files and have not yet been processed ie the …Prog.mat file does not exist. If you want to re-process a file you’ll have to delete the …Prog.mat. This program takes a bit of time to run so again, if you have a lot of files, leave it overnight (or you could run both the previous overnight via:

>> AvisToMatsPathInt; antcoords