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(***Input identifying information***)

In[ ]:= date = ToString[Evaluate[Input["Input the date of the experiment"]]]

In[ ]:= mouse = ToString[Evaluate[Input["Input the mouse identity (e.g. Mouse123)"]]]

In[ ]:= sessionNum = Evaluate[Input["Input the session number"]]

In[ ]:= (**Import the raw pixel intensities from the whisker pad**)
whiskPixIntensities =
  Part[#, 2] & /@ (Drop[Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/", date, "/",
       mouse, "/Session", ToString[sessionNum], "/", date, "_", mouse, "_", "Session",
       ToString[sessionNum], "_Whiskers/WhiskerPadPixelIntensity/", "Results.csv"]], 1]);

In[ ]:= (***Import the frame times from the camera***)

In[ ]:= frameTimes =
  Drop[Drop[(Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/", date, "/", mouse,
       "/Session", ToString[sessionNum], "/", date, "_", mouse, "_",
       "Session", ToString[sessionNum], "_CamSync.txt"], "List"]), 16], -1];

(***Calculate camera frame rate***)
frameRate = Round[Length[frameTimes] / (Last[frameTimes] - First[frameTimes])];

(***Verify that length of frameTimes = length of whiskPixIntensities, +/- 2***)

In[ ]:= Length[whiskPixIntensities]

Length[frameTimes]

In[ ]:= (***Match up the length of the cam sync pulses with the length of the image frames***)

In[ ]:= If[Length[frameTimes] > Length[whiskPixIntensities],
  frameTimes = Take[frameTimes, Length[whiskPixIntensities]];,
  whiskPixIntensities = Take[whiskPixIntensities, Length[frameTimes]];];

In[ ]:= (***Calculate the motion energy of the whisker pad***)

In[ ]:= whiskMotionEnergy = Abs /@ Differences[whiskPixIntensities];

In[ ]:= (***Import quiescent times to get sit on and sit off***)

In[ ]:= quietBouts =
  ToExpression /@ Import[StringJoin["S:/Imaging/Garrett/FMB208_2PRig/", date, "/",
     mouse, "/Session", ToString[sessionNum], "/LocomotionData/", date, "_", mouse,
     "_", "Session", ToString[sessionNum], "_QuiescentBouts.txt"], "List"];

In[ ]:= sitOnFinal = quietBouts[[All, 1]];

In[ ]:= sitOffFinal = quietBouts[[All, 2]];

In[ ]:= (***Export all data as .mat files for use in MATLAB software***)

In[ ]:= CreateDirectory[
  StringJoin["F:/", date, "/", mouse, "/Session", ToString[sessionNum], "/"]];
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In[ ]:= Export[StringJoin["F:/", date, "/", mouse, "/Session",
          ToString[sessionNum], "/", date, "_", mouse, "_", "Session",
          ToString[sessionNum], "_faceNorm", ".mat"], whiskMotionEnergy];

In[ ]:= Export[StringJoin["F:/", date, "/", mouse, "/Session", ToString[sessionNum], "/", date,
          "_", mouse, "_", "Session", ToString[sessionNum], "_pupilTime", ".mat"], frameTimes];

In[ ]:= Export[StringJoin["F:/", date, "/", mouse, "/Session", ToString[sessionNum], "/", date,
          "_", mouse, "_", "Session", ToString[sessionNum], "_sitOnFinal", ".mat"], sitOnFinal];

In[ ]:= Export[StringJoin["F:/", date, "/", mouse, "/Session", ToString[sessionNum], "/", date,
          "_", mouse, "_", "Session", ToString[sessionNum], "_sitOffFinal", ".mat"], sitOffFinal];

In[ ]:= Export[StringJoin["F:/", date, "/", mouse, "/Session", ToString[sessionNum], "/", date,
          "_", mouse, "_", "Session", ToString[sessionNum], "_camFrameRate", ".mat"], frameRate];
```