**iReach Data processing**

**Matlab scripts instructions**

**15/07/2020**

Notes for paper – movement detected with 50mm/s and data with 5 consecutive frames of data. Trial will be zeroed if movement not detected (only an issue for allocentric). Rt extracted from file, but MT, PV, TPV is computed based on threshold.

**Ego and Allocentric tasks**

Note for user – for allocentric code the perfect end-points need to be inputted within code and this needs to be checked to see if its correct

1. Organize your data per task and have a folder per subject
2. open MATLAB and the code (EGOprocess.csv or ALLOprocess.csv)
3. travel within subject folder you want to process in current folder in MATLAB (please make sure you are in the correct place as files are saved within the current folder and take care selecting correct files)
4. run the code – it will ask you to pick touch file and then the other file [please note that for allocentric trials endpoint coordinates will need to be entered manually on line 27).
5. visually inspect the plots of trials:

-velocity and trajectory graphs are produced per trial so you can check if these look ok (trial number is in title). Aberrant ones can be noted on a processing excel file – e.g., only one data point due to pencil error

* + end-points and error graphs produced – note if there are outliers

1. The code produces an excel sheet (subjectcode\_task\_processed) for your analysis where data is compiled. There are no headings but each column is a different variable. Each row is a trial. Here is the key:

Egocentric column labels: xtarget, Ytarget, RT, MT, trajL, x,y, PV, TPV, xerror, yerror, AE

Allocentric column labels: %% xtarget, Ytarget, ref x, ref y, correctendpointx, correctendpointy, RT, MT, trajL, x,y, PV, TPV, xerror, yerror, AE

Variable details:

Xtarget and y target – where red stimuli appeared (mm)

RT – reaction time (ms) defined using Tom’s code

MT – movement time (ms) defined with velocity based criterial of time between velocity >50mm/s and <50mm/s

trajL – number of frames with movement (small numbers are error trials where pencil skipped frames or did not record movement)

x,y – coordinates at the end of the movement (mm)

PV – peak velocity (too unreliable as iPad as low freq)

TPV – time to peak velocity (ms) too unreliable

Xerror and Y error – error in x and y axis compared to perfect pointing position

AE – absolute error (mm)

Ref x ref y – white stimuli positions in allocentric task

correctendpointx, correctendpointy – perfect endpoint positions for allocentric task

1. In excel you will need to exclude pencil error trials (where frames were skipped). This can be easily detected by comparing MT and trajL. The MT will be a very small number (<50ms and the trajL will be small too 0-10 frames). Don’t delete these completely but cut that row into to another sheet so you can compute % of excluded trials afterwards. This should spot the outliers noted above when you visually inspected the trials.
2. Once trials are clean of errors compute medians per participant and task for variables you wish to analyse. I recommend RT MT and AE.