On 20250404

Model T assuming correct P and h to estimate Target locations, T’.

We use proj39TargetErrorModels20250224.m to get the predicted target locations (x,y) for all five targets using indoor and outdoor pointing data separately (output file 'T6020250227TargetErrorCosSimilarity500.csv'). So we got 10 predicted target locations.

Then we calculate the all errors, most relevant one is (PointingErrorRemovingTargetPositionErrors) the modelT\_based pointing error. It is the difference between observed pointing direction and the predicted direction/angle participants should point from their correct testing position and heading (P and h) to the predicted T (T’ or T\_max).

We then calculated likelihood and AIC.

1. We treat the modelT\_based pointing errors from each of 10 predicted Targets (indoor and outdoor by five target buildings) separately, assuming their normal distributions have different std. We calculated MSE for them separately and then used these rMSE as their std to get the maximum likelihood. For each set of pointing errors, we used 2+1 parameters. We then average the MSE and sum AIC (in total 30 parameters). We got T1\_TModelAIC10 and saved it to T1\_TModelAIC10Target.csv

ModelPh, assuming correct Targets to estimate P’ and h’.

We use proj39step10GetMaxlikehood20250224.m to calculate the all errors, most relevant one is (PointingErrorRemovingPositionHeadingErrors) the modelPh\_based pointing error. It is the difference between observed pointing direction and the predicted direction/angle participants should point from their estimated testing position and heading (P’ and h’, or P’\_max and h’\_max) to the correct T.

1. We treat the modelT\_based pointing errors from each pair of predicted P’ and h’ (12 pairs) separately, assuming their normal distributions have different std. We calculated MSE for them separately and then used these rMSE as their std to get the maximum likelihood. For each set of pointing errors, we used 3+1 parameters. We then average the MSE and sum AIC (in total 48 parameters). We got T1\_PhModelAIC12 and read T1\_TModelAIC10Target from T2\_TModelAIC10Target.csv.
   1. We then got mean and std for MSE, R squared, and also ratio of R squared.

We presented MSE and R squared based on each predicted value.