Individual assignment

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Question 5

A. *Based on the plot, explain whether for this model and data set you would also reach the conclusion that human participants are efficient.*

Firstly, the y-axis of this figure is the average lateral deviation instead of the RMSE lateral deviation in the figure of the paper. However, it all shows the number of the lateral deviation. Compared to the value of the max-interleaving, steering-focus data of human participants has a certain increase in average lateral deviation, but a significant decrease in dialing time. This reflects that human participant has a trade-off between dialing-time and lateral deviation. This point can show human performance is efficient since it falls on the outside edge of the "performance space". But I don't think data point for the dialing-focus can prove this conclusion. Compared to the min-interleaving point, value of dialing-focus data of human participant is higher than it on the average lateral deviation, and dialing time is lower than it. So, it cannot be seen as a good trade-off on the performance space.

B. *Another argument in Janssen & Brumby (2010) is that in the steering focus condition people do not always interleave solely at the natural breakpoint (i.e., not solely in between digits 5 and 6). The Figure highlights the strategies that only interleave at the chunk boundary with a cross. Explain, based on this model result, whether you agree with this statement: "In the steering-focus condition, people only interleave at the chunk boundary".*

No, I do not agree with that statement. In the graph above, all cross point that shows chunk interleaving only strategy have a low value of dialing time and middle average lateral deviation in a large range. The cross point should be in the circle

area that near the human performance point. However, those cross points in the plot are too scattered to help us to get a conclusion that they have some relation with steering focus data. So, in general, I agree with the statement even for this plot.

Question 6

A. *How crucial is each of the three manipulations for your overall model fit and your confidence that the model result truly represents expected human behavior?*

For Regular Drift & Calibrated Drift: I don't think it is very crucial since it do not change a lot when comparing the figure on the left and right. Although the average lateral deviation is higher for calibrated drift than regular drift, it influences a little about the human performance data and the whole performance space.

For Regular IKI & Calibrated IKI: I think it is very important. Firstly, we look at graphs those use the regular IKI like figure 1-4, steering focus and dialing focus data is far away from other data points. However, as for graphs with calibrated IKI, human performance points always near other points and they are always on the boundary of the simulation area.

For 10 simulations & 50 simulations: I don't think it is very crucial but it is indeed a little important for overfitting. For the regular IKI situation, 50 simulations make human performance points more far away from other points and there is not much change for the calibrated IKI point. Compared to 10 simulations, points for the situation among 50 simulations are dense in a little range. It can be overfitting at some time. But in general, its influence is less than IKI.

B. *What would be your conclusion about the current data: do participants in the steering condition solely interleave at natural breakpoints?*

No, I don't think this conclusion is correct. For the situation with calibrated IKI, calibrated drift and 50 simulations, the human performance data is too far away from other data. Even for the 10 simulations, the cross points are too scattered.