Architectures of Intelligence
Assignment 2

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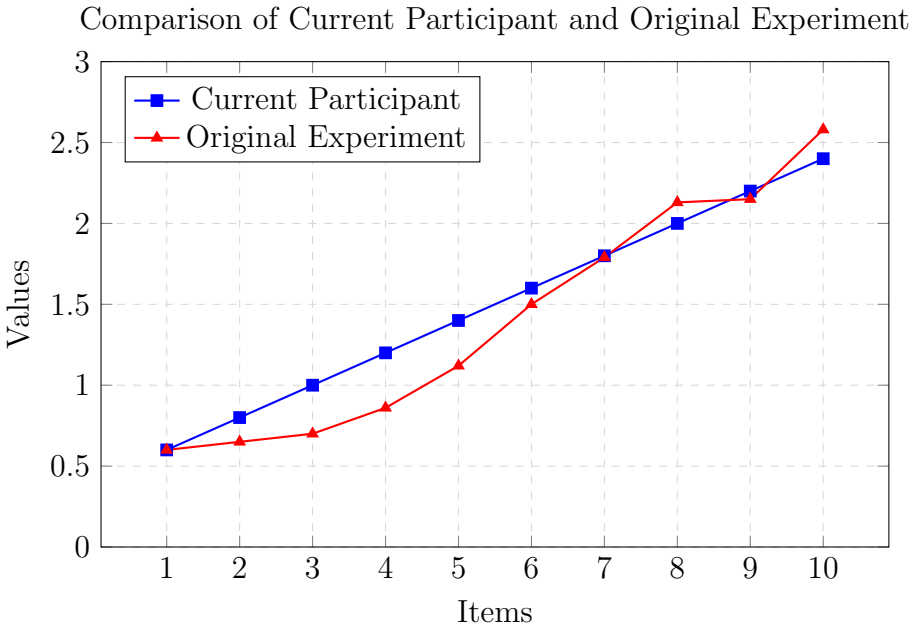
The Data

To explore the relationship between the ACT-R model and the original experiment data, we plotted the results, as shown below.



2. Human-Model comparison

The reaction times, grouped by human and model, differ in two distinct ways:

First, our ACT-R model has a reaction time that increases linearly with the number of items on the screen. The line is straight. This is because our model takes the same difference in time whether it needs to count 3 or 8 points on the screen.

Secondly, the brain clearly has some "grouping" mechanism that seems to be able to group three or fewer items and count them quickly as one. This would explain the low reaction times for one up to six items on the screen for the Original Experiment. The human brain could quickly divide into two groups of three to get to six. The human data correlation with our ACT-R model after six is reasonably consistent.

A little footnote: I feel the above answer combines a decent answer to both question 2a and 2b.