

## Participants:

- 5 participants over 5 days, performing 5 tasks per day.
  - Planar
  - Projective
  - Defacto with rested elbow
  - De facto unrested
  - TouchPad
- Some form of Latin Squares design. Probably a Latin Hypercube Sampling.
  - Rudimentary design (simple rotation from a balanced latin squares design, probably not vertically balanced)
    - Subject 1:

day 1: A B E C D	Done
day 2: B C A D E	Done
day 3: C D B E A	Done
day 4: D E C A B	Done
day 5: E A D B C	Done
    - Subject 2:

day 1: B C A D E	Done
day 2: C D B E A	Done
day 3: D E C A B	Done
day 4: E A D B C	Done
day 5: A B E C D	Done
    - Subject 3:

day 1: C D B E A	Done
day 2: D E C A B	Done
day 3: E A D B C	Done
day 4: A B E C D	Done
day 5: B C A D E	Done
    - Subject 4:

day 1: D E C A B	Done
day 2: E A D B C	Done
day 3: A B E C D	Done
day 4: B C A D E	Done
day 5: C D B E A	Done
    - Subject 5:

day 1: E A D B C	Done
day 2: A B E C D	Done
day 3: B C A D E	Done
day 4: C D B E A	Done
day 5: D E C A B	
  - Taken from the R williams project.
- Subject pool: try to get from whatever other classes are going on now.

- Remuneration: Each participant given a coupon a day. Cost:  $\$8 \times 5 \times 5 = \$200$ . Problem will be if some participant chooses to not come in on the last day. Alternative is to give 1 coupon the first day, another on the third day, and 3 on the last day.
- Conditions: Participants have to agree to come in **5 days in a row**. Otherwise we stand to introduce errors with the expected learning effect.
- Ideally, we would use participants who have not used the system before. Getting the undergrads who are around for summer classes would be good.
- **PROBLEM:** If defacto gorilla needs for the leap to be flat, while rested requires the leap to be tilted. How to swap from one to the other?  
Solution: ??
  - Maybe making the calibration blind will not be needed if *\*ALL\** participants are fresh, with no prior experience.
  - That way we don't need to perform all calibrations up-front.
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## Duration:

	mouse	defacto gorilla	defacto rested	PS - matrix	PS - surface	total
calibration	0	0	0	1	1	<b>2</b>
practice	.5	.5	.5	1	1	<b>3.5</b>
video	.5	1	1	2	2	<b>6.5</b>
task	2	4	4	4	4	<b>18</b>
<b>total</b>	<b>3</b>	<b>5.5</b>	<b>5.5</b>	<b>8</b>	<b>8</b>	<b><u>30</u></b>

This estimation is quite optimistic and relies on the calibration duration being quite low. However, doubling the calibration and corresponding practice time only increases the total duration by 4 minutes. Assuming participants need 3 calibrations for both PS-matrix and PS-surface, we increase the total time to  $30 + 4 + 4$  minutes, giving us a pessimistic duration of 40 minutes which is still within scope. Enforcing 1 minute of rest time between each task only increases pessimistic time to 44 minutes.

Adding another item for benchmark, eg the touchpad, is not a good idea. It would change the way the Latin Squares design is done. We will therefore need either 6 days or 6 people or both. Not ideal.

## Experiment:

- Perform and persist all calibrations first.
  - Watch video
  - Perform Calibration
  - Perform test/practice
  - IF OK then continue, ELSE repeat
- Perform task as per Latin Squares
  - Ensure all gesture-related experiment has a non-descriptive name so that subjects do not know which version they are using.

## TODO

1. Ensure surface fitting technique
2. Persist and load calibration. Ensure if program crashes, can still continue.
3. Front End changes -- nondescript version
4. do IRB
5. do Pilot
6. recruit participants