Follow up 5/5/2011 meeting

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Hello everyone,
As a follow-up to the meeting on 5/5/2011, below are the notes and the action items I recorded. Please advise if I have missed anything.

Meeting Notes

1. ROCF Data Analysis
   1) Caesar:
      i. Check normality using one-sample Kolmogorov-Smirnov test
         1. Three conditions were normal.
         2. However, non-parametric analysis was used since they did not have equal variance.
      ii. Both tests (with subject 9 and without subject 9 as an outlier) showed that there were no significant effects of improvement (see detail data analysis file in the website).
      iii. Post-hoc used Tukey test. However, this might be conservative.
         1. Caesar needs to compare each pairwise test using Kruskal-Wallis test.
      iv. Unit improvement test:
         1. No significant effect of improvement for each unit.
            a. Caesar needs to do pairwise t-test (Zeno already did this test.) for the native task since some of the unit showed negative improvements.
   2) Zeno:
      i. ANOVA (ROCF score = type of training (T) + Completion time (C) + T*C)
         1. There is a significant effect of completion time between pre and post tests of ROCF.
         2. However, there are no significant effects of “type of training” and their interaction.
      ii. Percentage improvement:
         1. Dr. Kaber mentioned that this test is not appropriate for our analysis.
      iii. Pair-comparison for each type of training
         1. Only augmented VR leads to a significant effect of improved ROCF score.
2. In the feature analysis graph, unit 12 does not have variability.
3. Unit 9 (outlier): only augmented VR showed significant effect of performance with unit 9.

3) Dr. Tupler:
   i. He presented and discussed pixel-based scoring approach.
      1. See presentation file in the website for more detail information.

2. Confidence rating analysis
   1) Janet:
      i. Same analysis and results as last meeting.
      ii. Last time, Basic VR showed very big variability (STDEV). So, she tried to remove subject 2 data as an outlier.
         1. However, the results has no difference.

2) Zeno:
   i. There is a significant differences between pre and post confidence ratings (F(1, 18)=19.86, p=0.0003).

3. Block design analysis (Zeno)
   1) ANOVA results showed that there was a significant differences between pre and post BD scores (F(1, 18)=27.8595, P<0.0001)
   2) Dr. Kaber mentioned that we do not need to do block design and matrix reasoning change rate analysis.

4. Enhancement for VR (Linus)
   1) Three problems
      i. P1: Difficulty of hidden block pattern.
      ii. P2: Design recognition
      iii. P3: Haptic device usability

   2) Solutions
      i. P1
         1. Block translucency
            a. Discussion: Picking an area of the target grid (before grabbing a block) seems to be out of line with the fundamental of our experiment.
            b. Discussion: Transparency might confuse users.
         2. Planar figure representing a cube cut open and laid flat
            a. Planar figures may have too many visual cues so that it may obscure users’ vision.
      ii. P2
         1. Flashing a grid over the pattern at the top using “HINT” button
a. Keeping highlight grid seems more efficient.
b. Only one of the block in the grid can be flashed (highlighted).
c. A number of flashing (pushing a hint button) is worthwhile data.

iii. P3
   1. Direct manipulation by rolling a block on the desk
      a. It is considerable to change a center of rotation axis (grabbing point).
   2. Rotation gain control
   3. Auditory feedback
      a. Tick sound can annoy users because of a number of collisions when approaching between blocks.
   4. (Dr. Kaaber) Manipulating and rotating block using stylus button

5. Draft of NSF report
   1) Prepare a draft until next meeting
   2) Need to make sure gray scale images for the report.

These are all the items that I noted or recalled from the meeting. If you have other points, please let me know.

Guk-Ho Gil