“VooDoll”

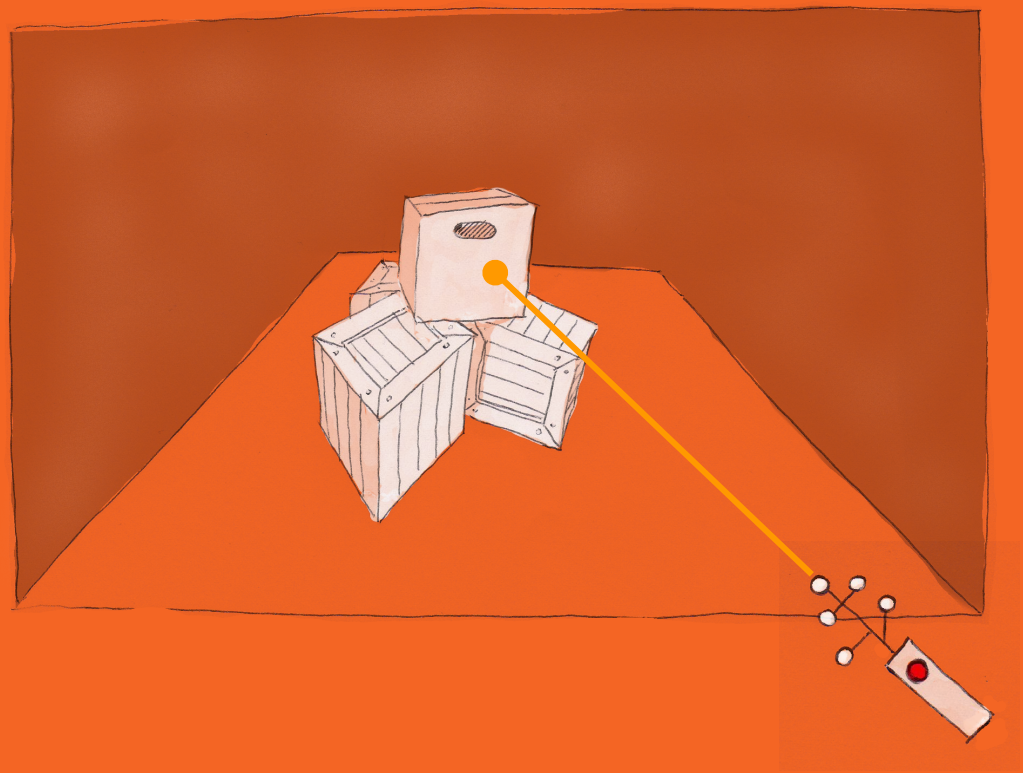
implementation of a manipulation technique
by Sebastian Schmitz and Anton Frolov

Concept

- derived from the “Voodoo Doll” manipulation technique by Pierce, Stearns and Pausch*
- bimanual, ambidextrous
- raycasting for object selection
- scale, translation & rotation manipulatable

Selection

- ***point at target***



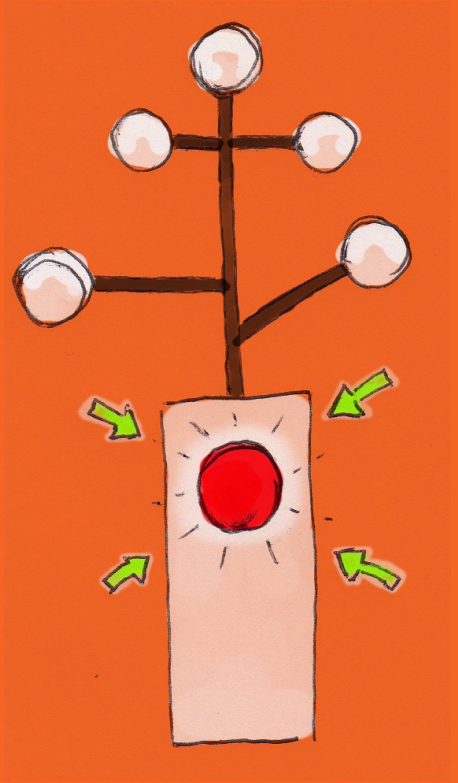
Selection

- ***press and release button***

  → object is selected

- ***keep button pressed***

  → object is selected and scaling mode entered



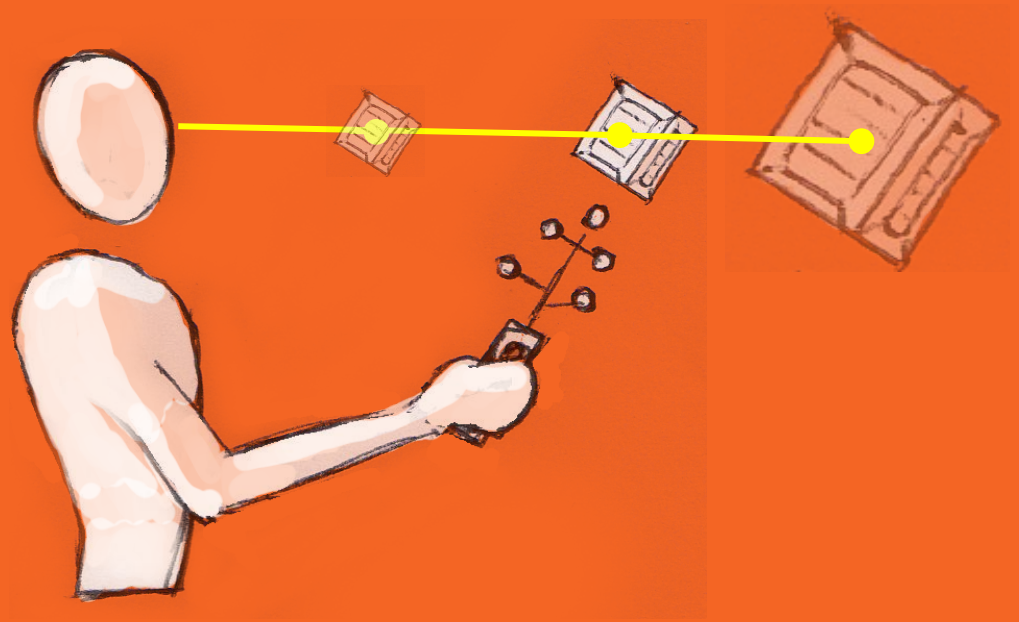
Scaling

- ***keep button pressed***

  → larger head-hand distance scales up

  → non-isomorph

  → ***release button to end scaling***



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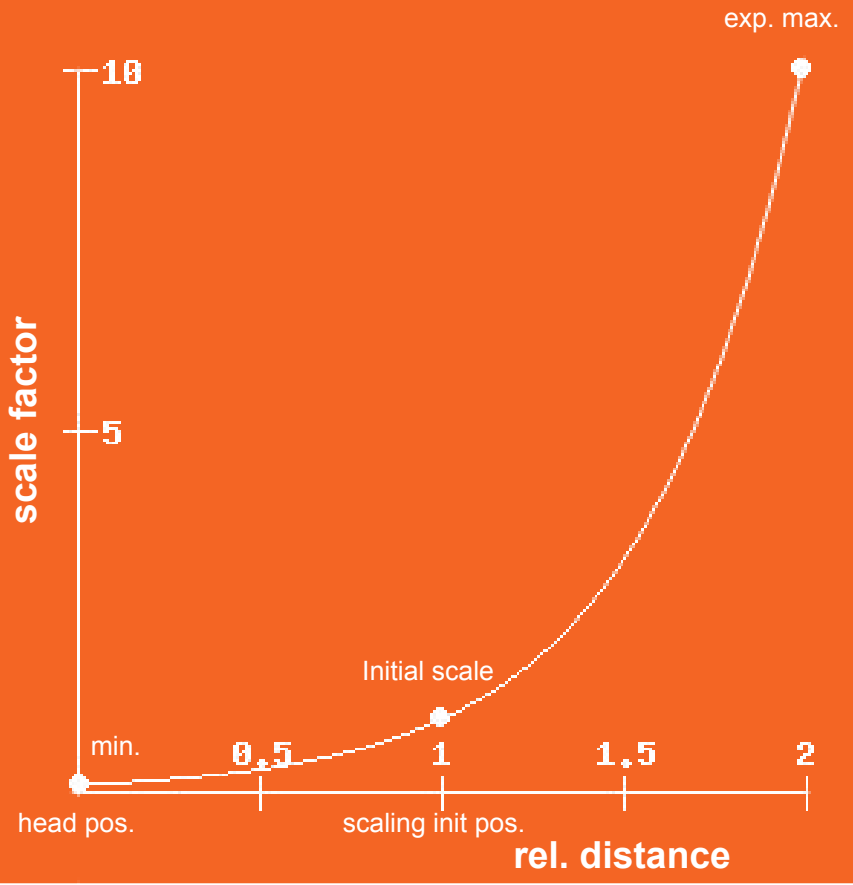
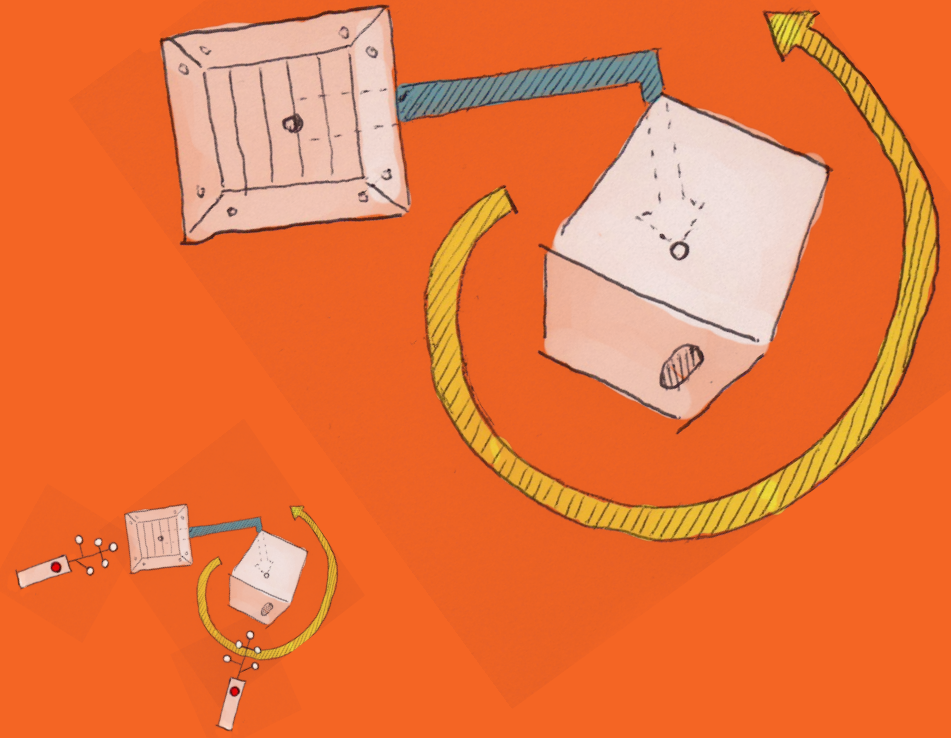


Translation & Rotation

- move doll and needle to change their relative position
- updated in real-time
- ***click needle button to release needle***
- ***click doll button to release both***



Comparative study

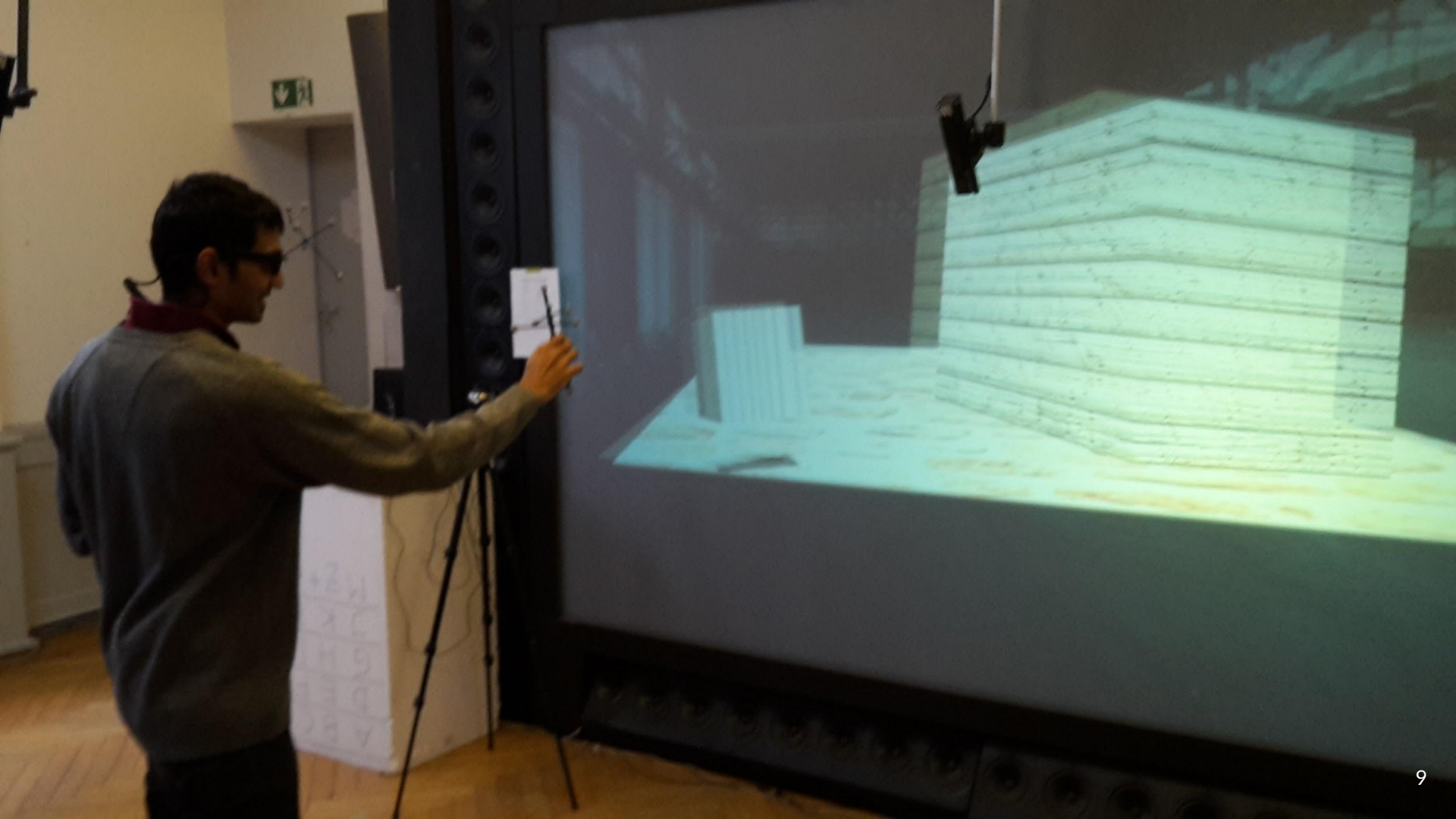
Situational comparison of subjective effectiveness between the developed technique and “GoGo”

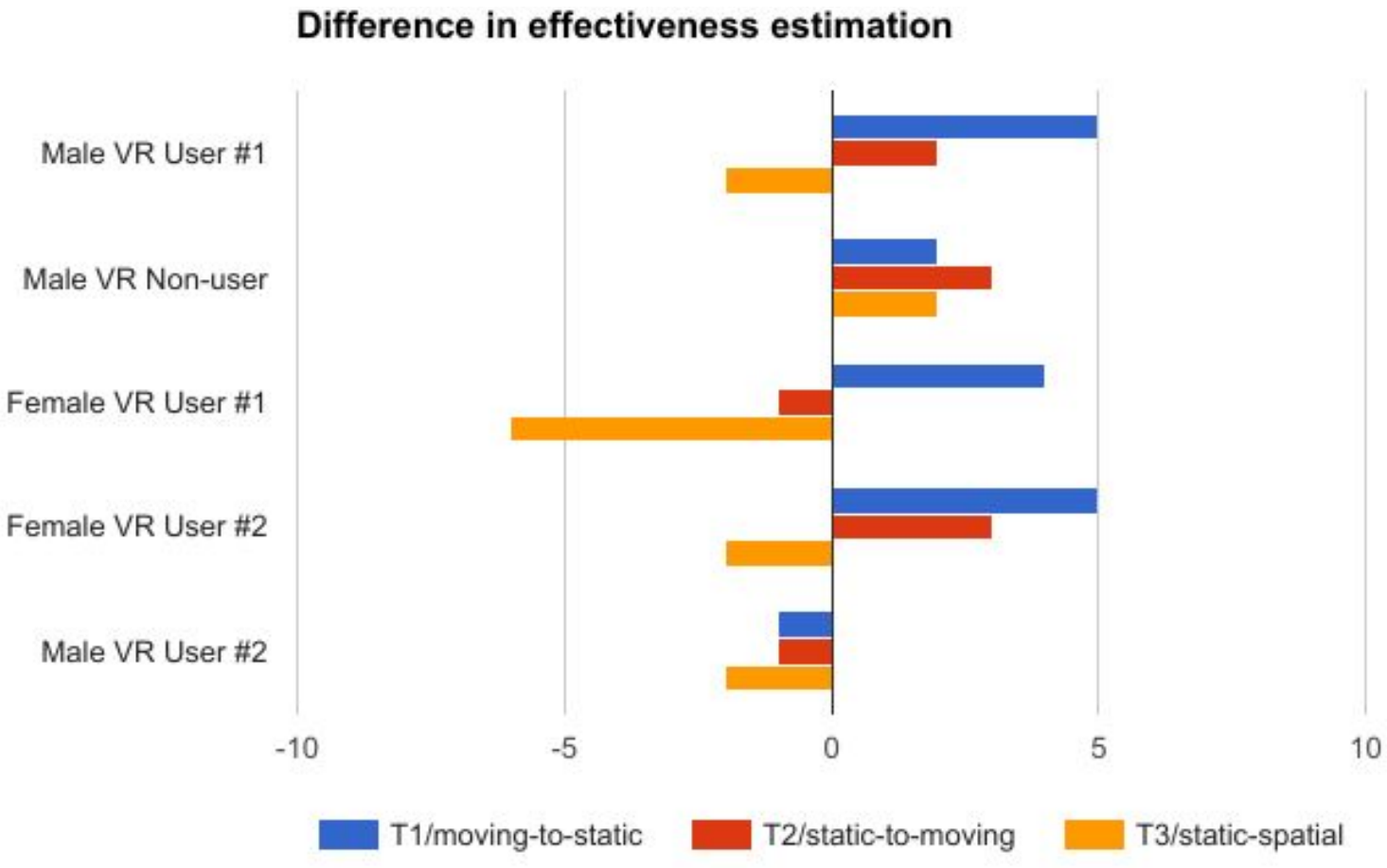
Same environment

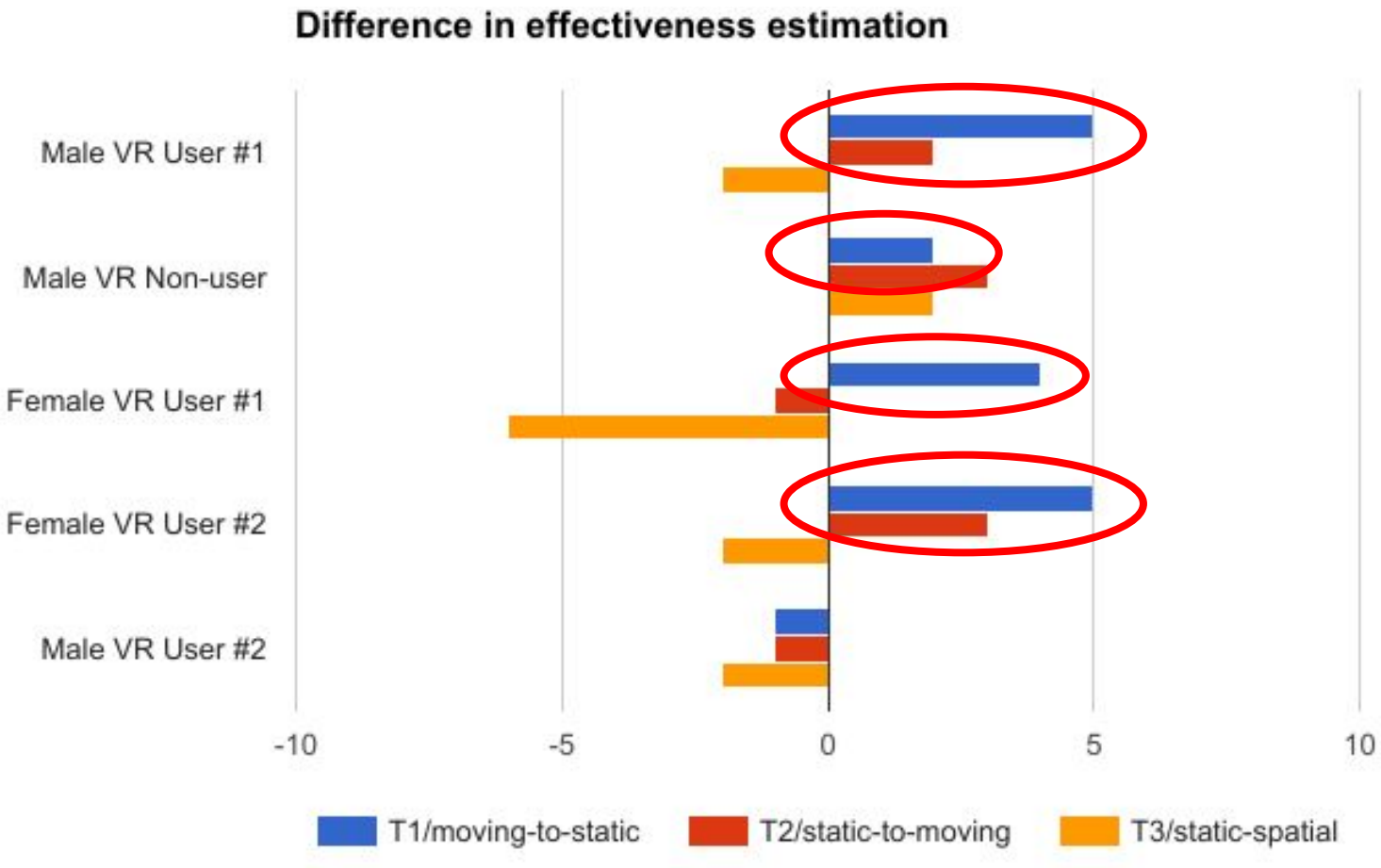
3 manipulation tasks

5 participants (3 male, 2 female; 4 VR users and 1 non-user)

Feedback collection through Google forms




Difference in effectiveness estimation
Male VR User #1
Male VR Non-user
Female VR User #1
Female VR User #2
Male VR User #2
-10
-5
0
5
10
T1/moving-to-static
T2/static-to-moving
T3/static-spatial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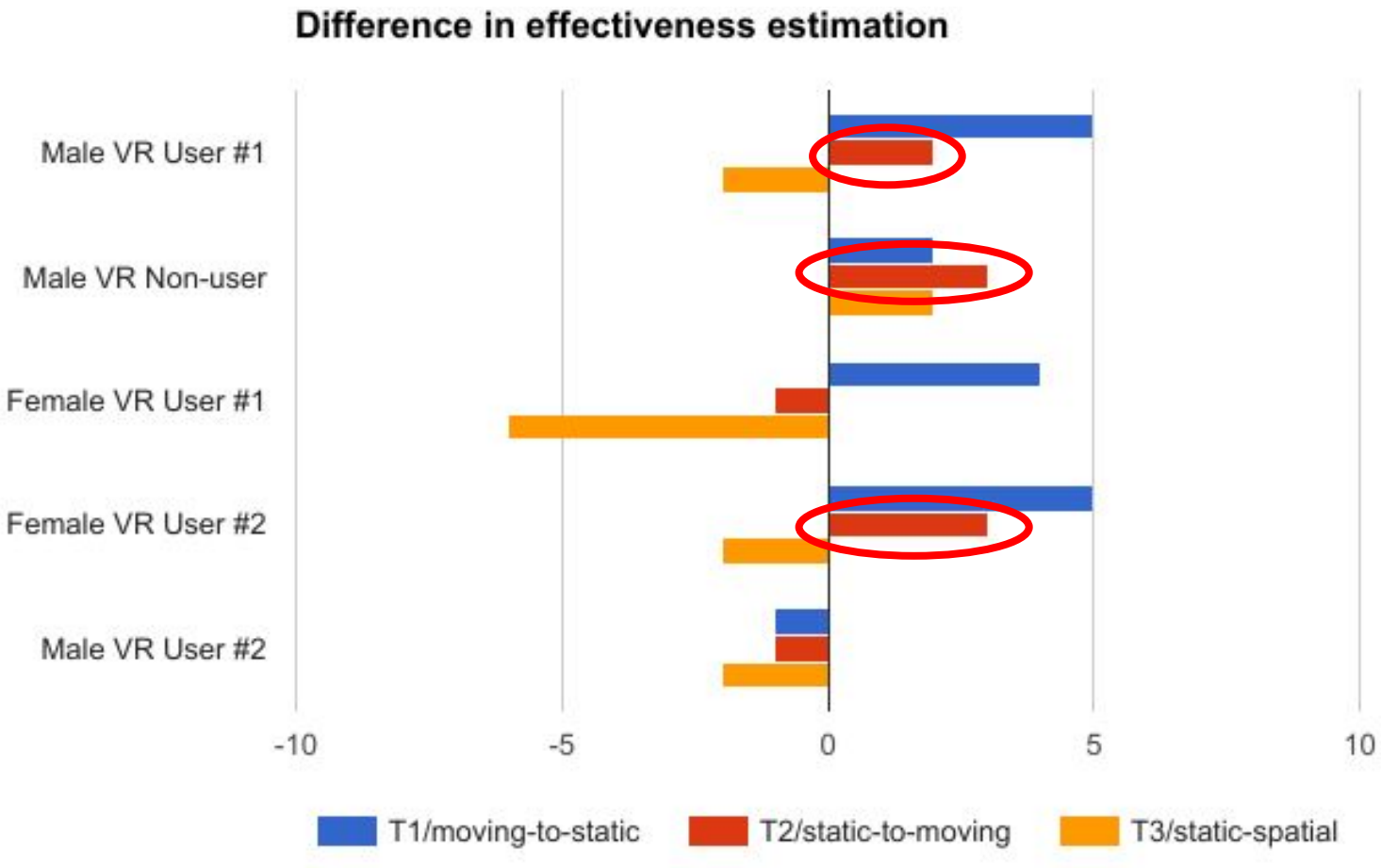
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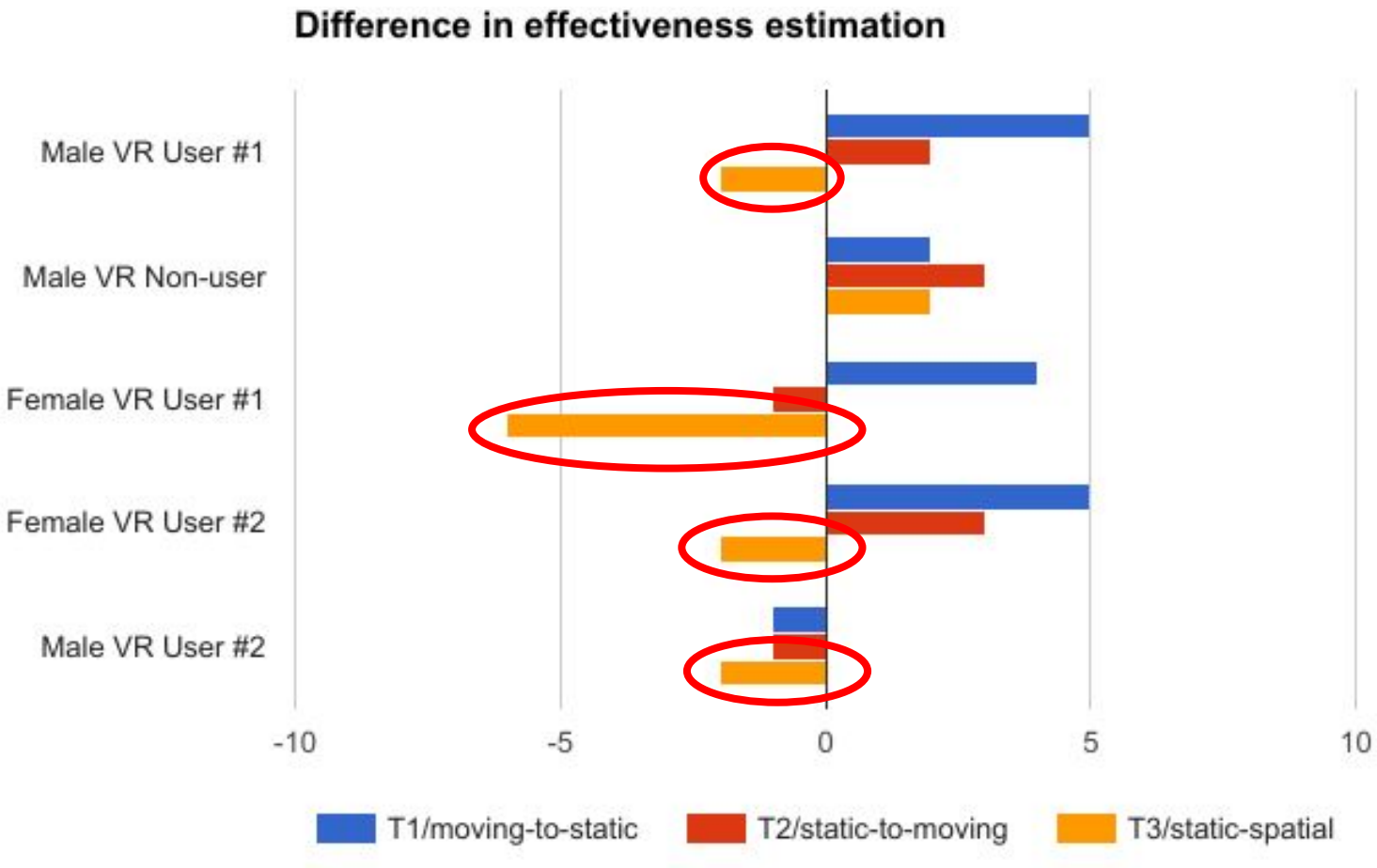
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T3/static-spatial

Study observations

- “VooDoll” has a steep learning curve
- works equally well for left- and right-handed participants
- distinction between copies and originals sometimes challenging
- ludic qualities
- experimental tool exploration

References

- Pierce, Stearns and Pausch: *Voodoo Dolls: Seamless Interaction at Multiple Scales in Virtual Environments*. Carnegie Mellon University, 1999.