

Reaching Out: Investigating Different Modalities to Help People with Visual Impairments Acquire Items

Sooyeon Lee, Tina (Chien Wen) Yuan, Benjamin V. Hanrahan, Mary Beth Rosson, John M. Carroll

{sul131, tuy11, bvh10, mrosson, jcarroll}@ist.psu.edu

Center for Human Computer Interaction, College of Information Sciences and Technology, Pennsylvania State University
University Park, PA 16801



Objective

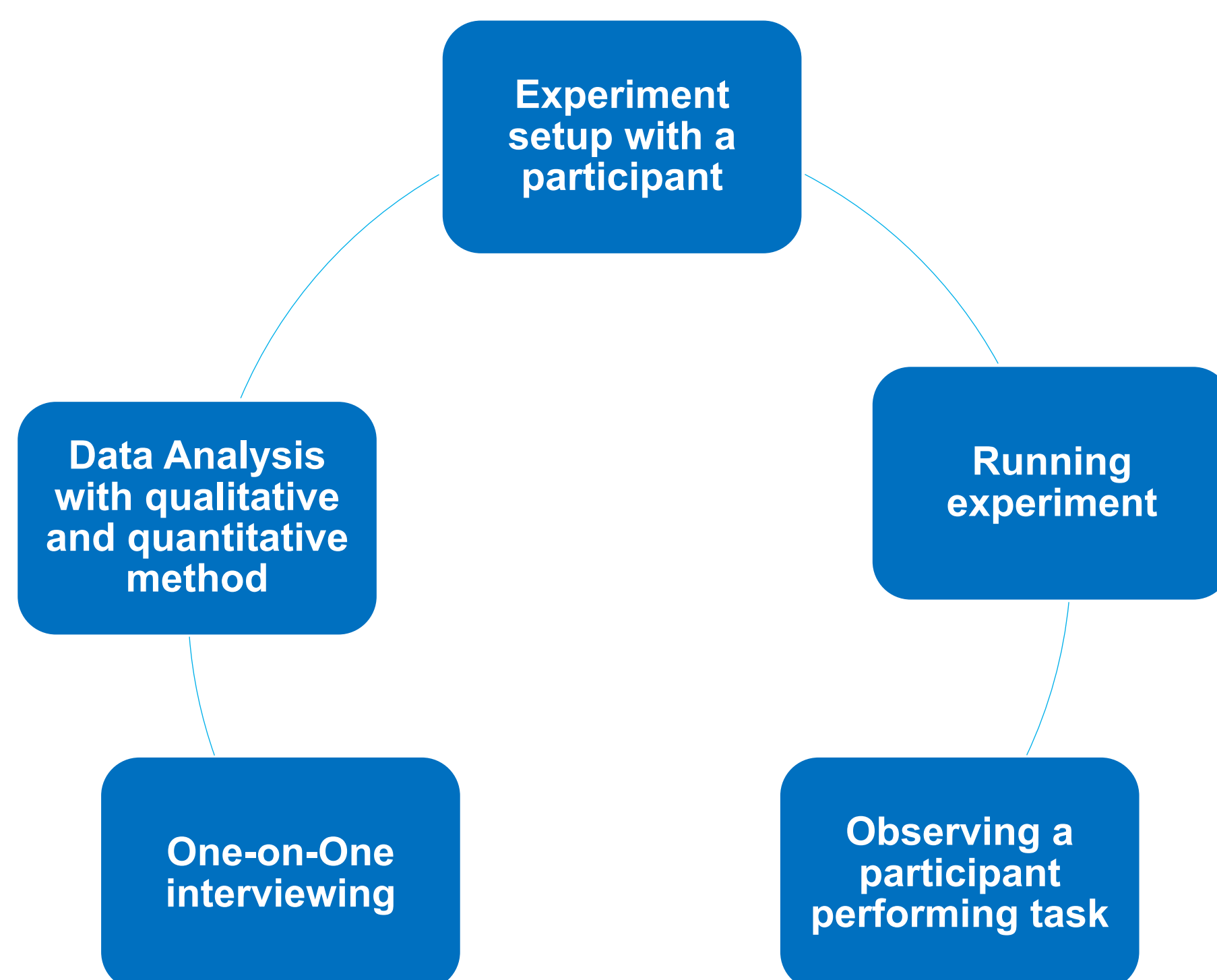
- Investigating experience and effectiveness of five signaling designs to guide item acquisition



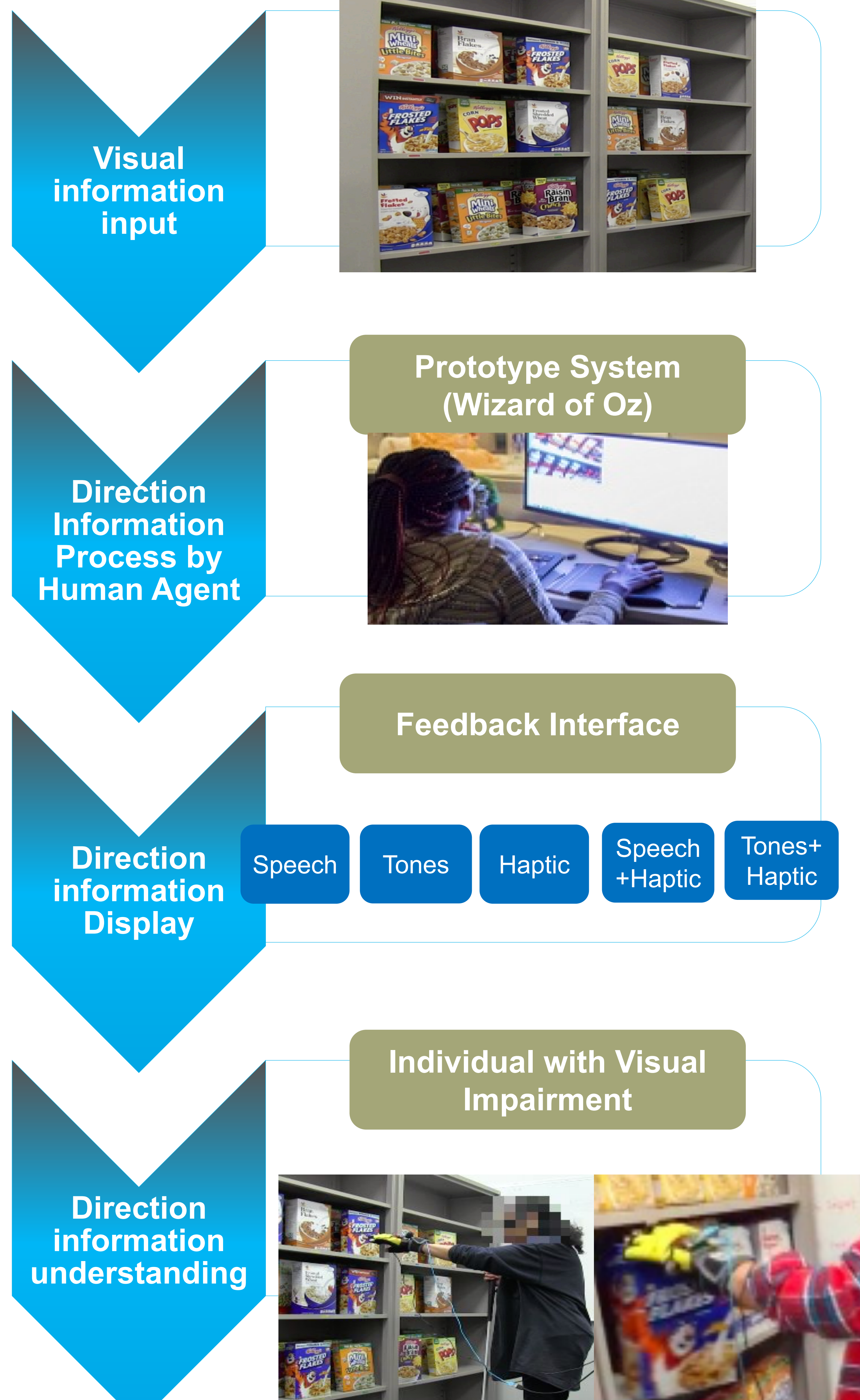
Study Design

- Wizard of Oz mockup of grocery shelves; prototype haptic glove system; camera
- Five conditions of feedback: Tones; Speech; Haptic; Speech + Haptic; Tones + Haptic
- Pilot study - 63 blind-folded sighted people
- Main study - 11 people with visual impairments

Study Procedures

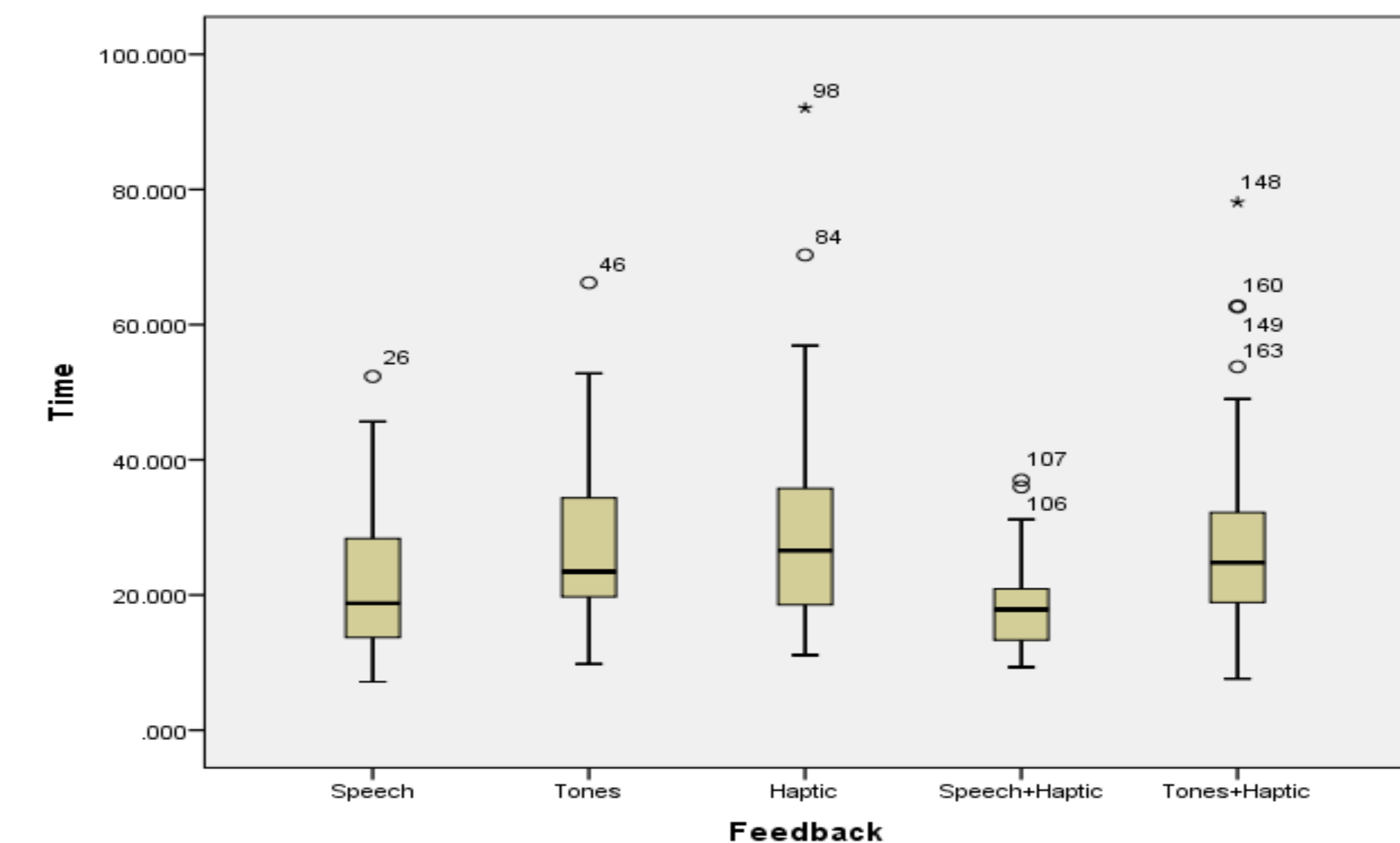


Prototype System Interaction



Findings

- Arm-and-hand navigation support experienced as helpful
- Most effective and preferred feedback condition – Speech + Haptic



Feedback from participants

“speech is great, I was able to do with speech, but when haptic feedback was added into it, it helped to get the picture as clear as possible.”

“The two, they just seemed to be kind of blending and reinforcing the other.”

“I like vibration because it could be noisy in the store and harder to hear.”

Future Study

- Exploring how to better implement the speech/haptic combination
- Further designing interaction interface and the user experience