

Enabling Human Micro-Presence through Small-Screen Head-up Display Devices



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Abstract

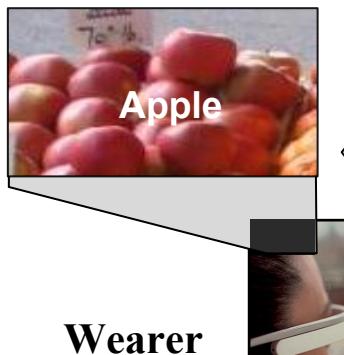
Networked head-mounted display devices promise hands-free just-in-time information experiences. We investigate micro-presence systems using mobile and wearable devices to facilitate real-time micro-interactions with remote peers.

Motivation for human micro-presence

- ✓ Human micro-presence is more pleasant, personable and context-aware than computer-based help.
- ✓ Just in time information delivery allows for contextual learning, peer learning and spaced repetition for more effective information exchange and social interactions.



Micro-presence system



Establish context, e.g. images

Just-in-time information, e.g. annotated crops

TagAlong allows remote companion(s) to provide information for a mobile wearer with Google Glass.

Wearer



Companion

Experimental Results: Target acquisition tasks

Crop sizes



Regions



Full Image



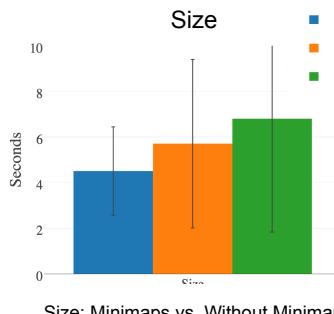
Crop



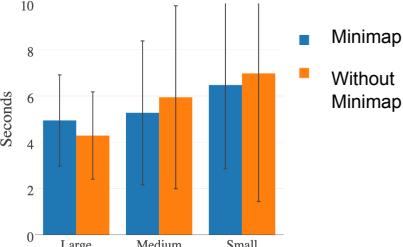
Minimap (to show relative position of crop)



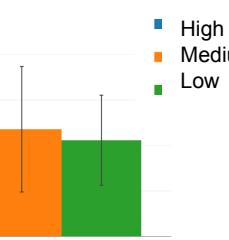
Crop with Minimap



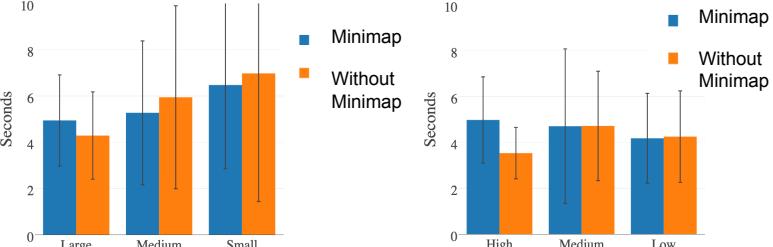
Size: Minimaps vs. Without Minimaps



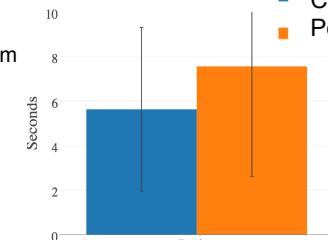
Resolution



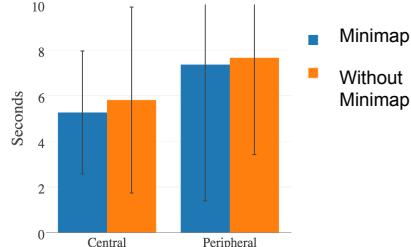
Resolution: Minimaps vs. Without Minimaps



Region



Region: Minimaps vs. Without Minimaps



Results

- Time improved for bigger crops.
- Time for central crops was faster than peripheral crops.
- Mini-maps improved timings for small, medium, and central crops.

Conclusions

- We developed TagAlong to allow just-in-time information to be sent from companion(s) to wearer.
- We investigated environment and feedback variables that improve the efficiency of target acquisition.

Future Work

- Explore methods for pointing while the wearer is mobile and the scenery is changing.
- Explore the social aspect of micro-presence.