Paracentral and Near-peripheral Visualizations:

Towards Attention-Maintaining Secondary Information Presentation on OHMDs during In-Person Social Interactions

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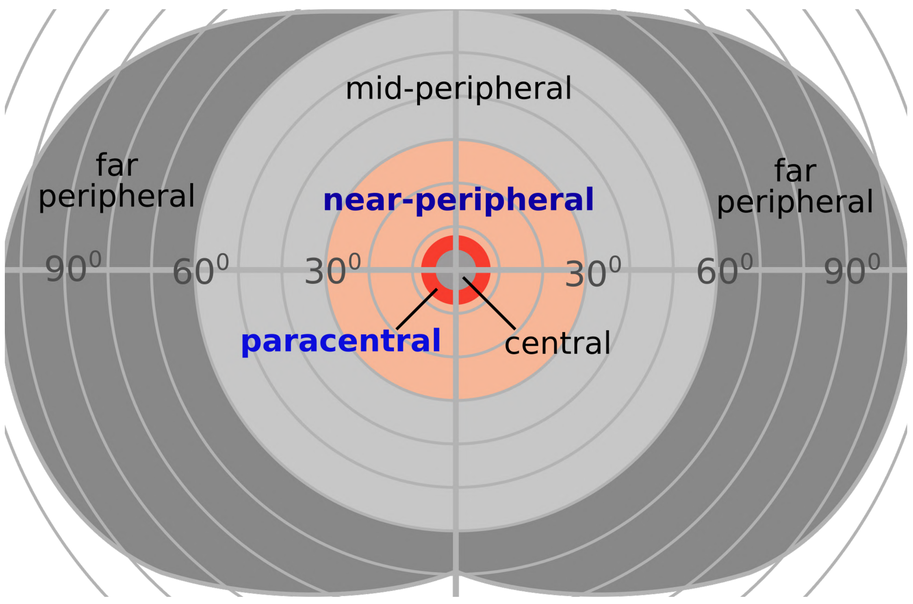
INTRODUCTION

Optical see-through Head-Mounted Displays (OST HMDs, OHMDs, **AR smart glasses**) facilitate situational awareness while accessing secondary information. However, information displayed on OHMDs can cause attention shifts, distracting users from natural social interactions. We hypothesized that **information displayed in paracentral and near-peripheral vision could be better perceived while the user is maintaining eye contact** during face-to-face conversations. Leveraging this idea, we designed a circular progress bar to provide progress updates (e.g., reminder notifications) in paracentral and near-peripheral vision.

HUMAN VISION



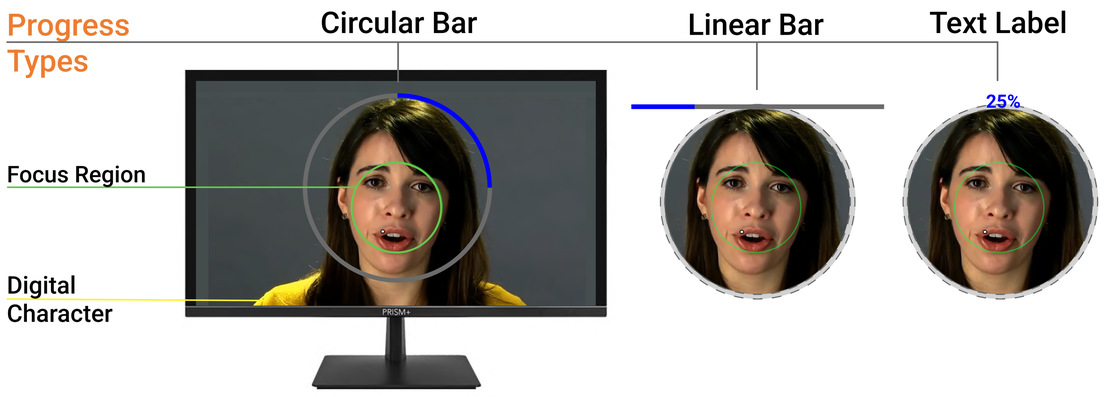
RESEARCH QUESTIONS

1. How does the presentation type of secondary information on OHMDs impact the perception of progress reminders during face-to-face conversations?
2. How does the presentation type of secondary information on OHMDs impact the quality of face-to-face conversations?

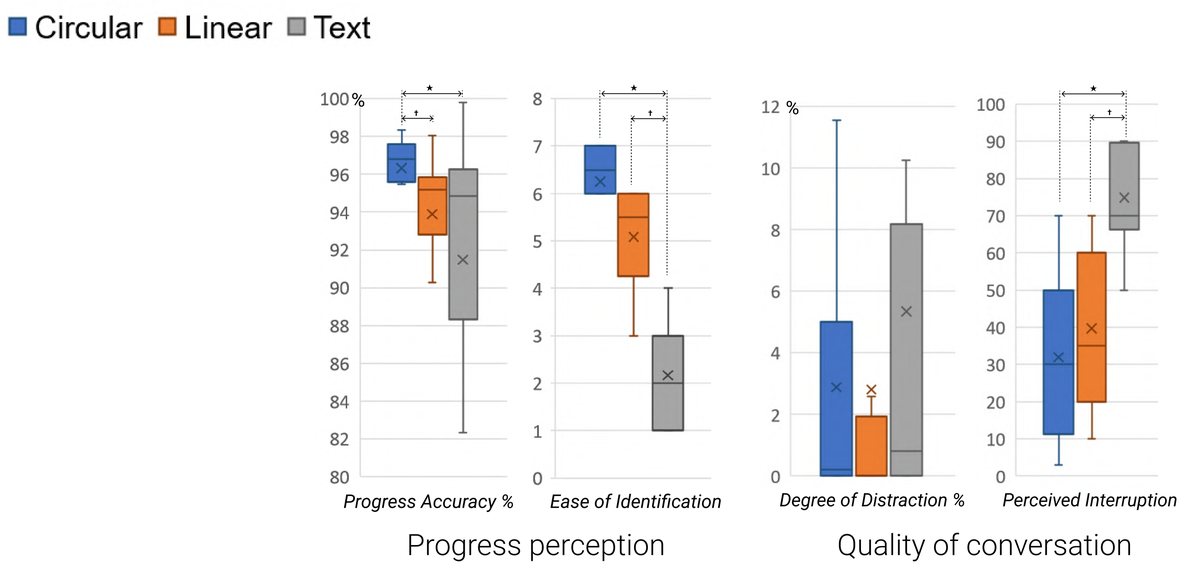
TAKEAWAYS

- A circular progress bar can effectively reduce notification distractions without losing eye contact and is more preferred by users in a conversation setting.
- Presenting information **circularly** in OHMDs can utilize the benefits of paracentral and near-peripheral vision.
- **Future work:** Explore other **attention-maintaining secondary information display designs**

STUDY 1



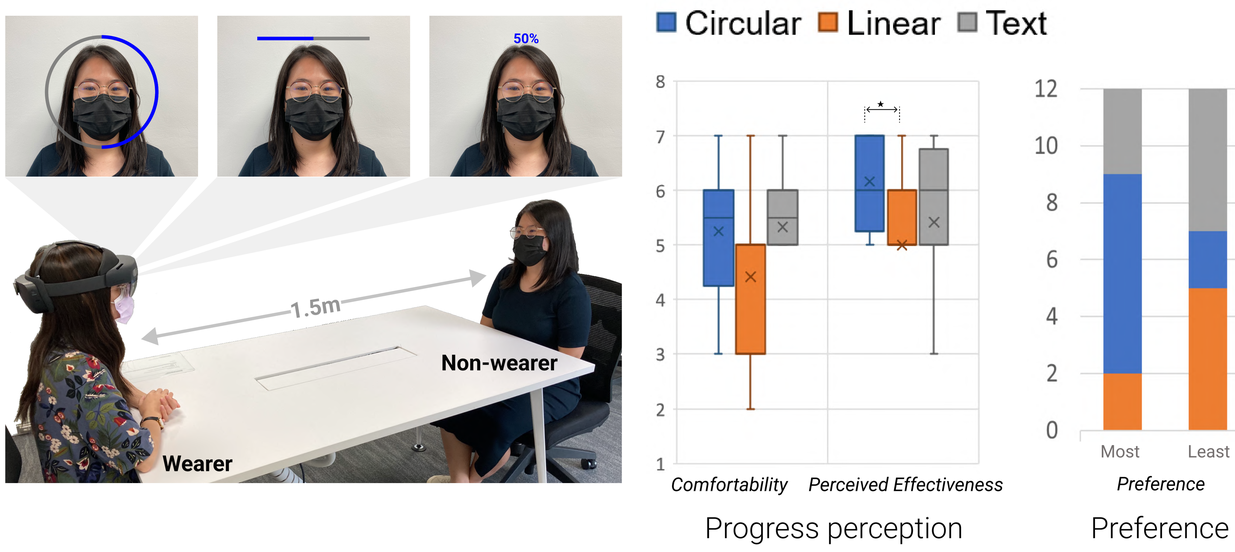
- Simulated (conversation) setting with eye-tracking (N =12)
- Maintain eye contact with the digital character and acquire progress information



- The circular bar had the highest accuracy and lowest interruption.
- The circular shape enabled users to identify the progress value without moving their eyes across the screen. Its larger size and “clock”-like interface helped users read progress values easily.
- Text reading engaged central vision and was thus harder to read when users maintained focus on the face.

STUDY 2

- Realistic (conversation) setting (N = 12)
- Measure effects of progress type on face-to-face conversations



- There were no statistically significant differences between progress presentation types in terms of quality of conversation.
- The majority of participants still prefer the circular bar over others.

https://github.com/NUS-HCILab/CircularProgressBar

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