

BACKGROUND

Autonomous vehicle (AV) is an emerging technology and older adults are expected to be one of the largest user cohorts of AV as it supports aging-in-place through freedom of mobility [1]. As aging is associated with sensory and cognitive declines, the elderly might have unique needs and challenges while interacting with AVs. Therefore, our goal is to understand the specific challenges and preferences of older passengers while riding inside a self-driving car and design potential interfaces for them to facilitate reliable and suitable communication.

NEED FINDINGS: METHOD

Interview

We study older adults' concerns and design preferences while riding inside a fully AV and explore possible inclusive interfaces considering psychological riding comfort and perceived safety [2].

- ❑ Individual interview sessions
- ❑ N=10 participants (aged 65+)

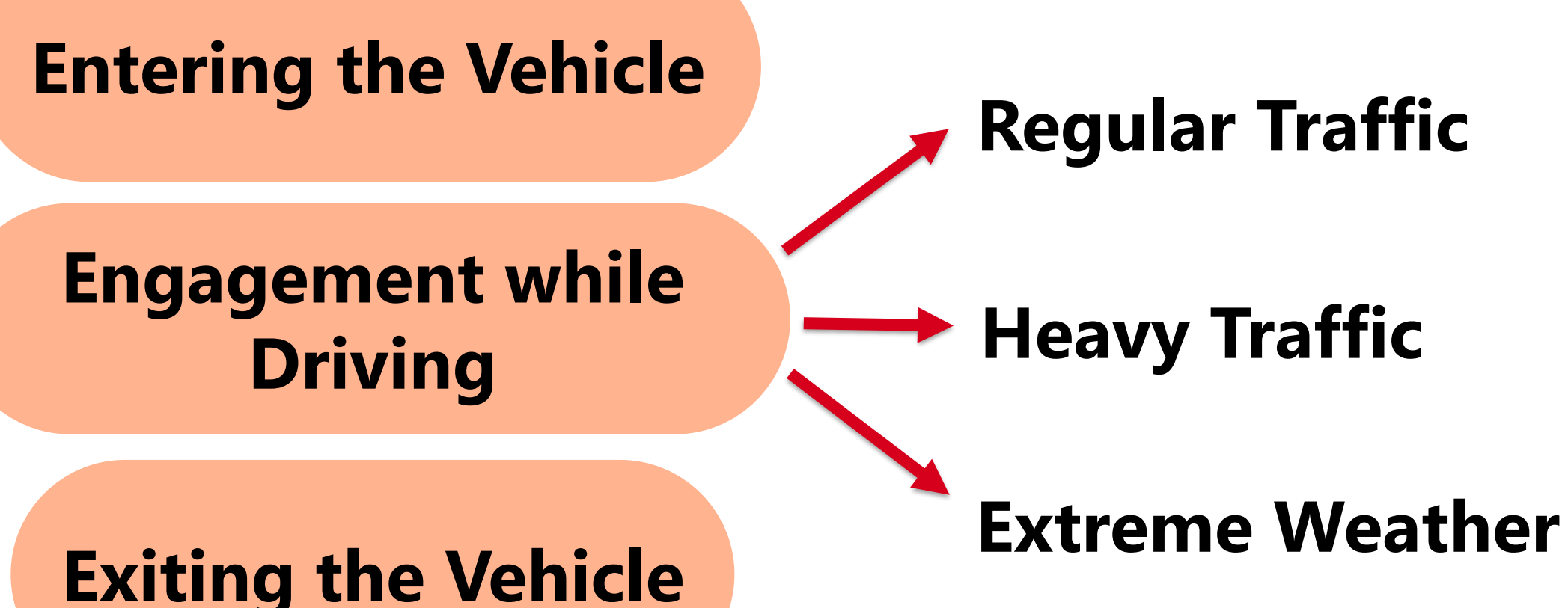


Results

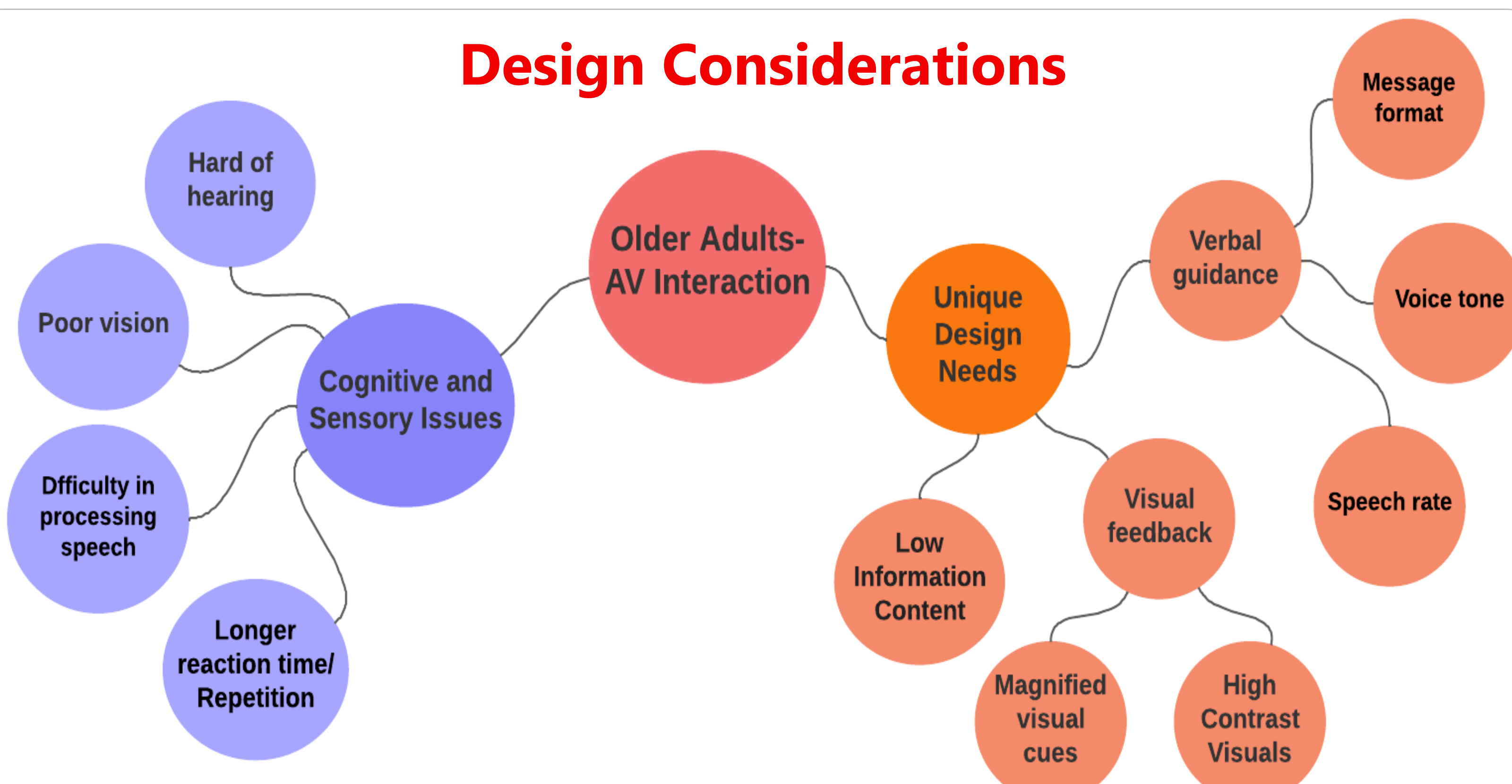
- ❑ System Transparency
- ❑ Control Takeover Complexity
- ❑ Multisensory Interfaces
- ❑ Ways of Communication
- ❑ Familiarity of Cues
- ❑ Mode of Use:
 - Ride Sharing vs Ownership

DESIGN: INTERFACE PROTOTYPES AND VR SIMULATION

VR Scenarios



Design Considerations



Design Evaluation: N=15 participants (aged 65+)



Figure 1: Implemented design interfaces: (a) a user scans the verification code with the scanner in the side mirror of the car to get entry access, (b) a visual screen shows the animated pedestrian crossing progress, (c) a dynamic display at the back of the seat shows the traffic updates, and (d) an elderly participant is testing the VR simulations.

DISCUSSION AND CONCLUSION

- All participants preferred receiving occasional cues from the vehicle initially. However, over time they wanted to ride as a passive passenger.
- Some of our research findings highlight the importance of designing interfaces that are uniform, self-controlled, and match the passenger's prediction.

REFERENCES

- [1] Huff Jr, E. W., DellaMaria, N., Posadas, B., & Brinkley, J. (2019, October). Am I too old to drive? opinions of older adults on self-driving vehicles. In *The 21st International ACM SIGACCESS Conference on Computers and Accessibility* (pp. 500-509).
- [2] Gluck, A., Boateng, K., Huff Jr, E. W., & Brinkley, J. (2020, September). Putting Older Adults in the Driver Seat: Using User Enactment to Explore the Design of a Shared Autonomous Vehicle. In *12th International Conference on Automotive User Interfaces and Interactive Vehicular Applications* (pp. 291-300).

Email: ashratuzzavin.asha@ucalgary.ca

Find me at: <https://sites.google.com/view/ashratuzzavinasha>