

Invisible Guardian

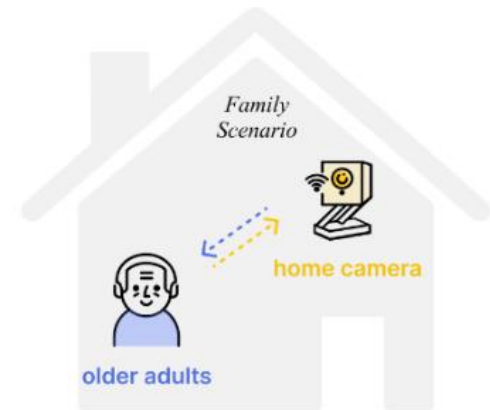
Home Cameras with Fall Detection for Older Adults

Motivation

- **Falls** are a **major cause** of unintentional injury deaths worldwide.
- Adults over 60 suffer the greatest number of fatal falls.
- **Home cameras** with fall detection can provide **life-saving** alerts.
- **Privacy concerns** exist around the use of cameras in homes.

Methods

- **Qualitative** methods with multiple approaches
 - Surveys (N=389)
 - Semi-structured interviews (N=20)
 - Focus group & Co-design workshop (N=6)
 - Diary studies (N=11)



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Surveys & Interviews

- Understand older adults' attitudes, experiences, expectations, and preferences related to home cameras with fall detection.
- Over 50% of older adults were willing to use home cameras, but others had concerns such as high costs, complicated features, and privacy issues.



Type I

Full acceptance of camera (FAC)



Type II

Conditional acceptance of camera (CAC)



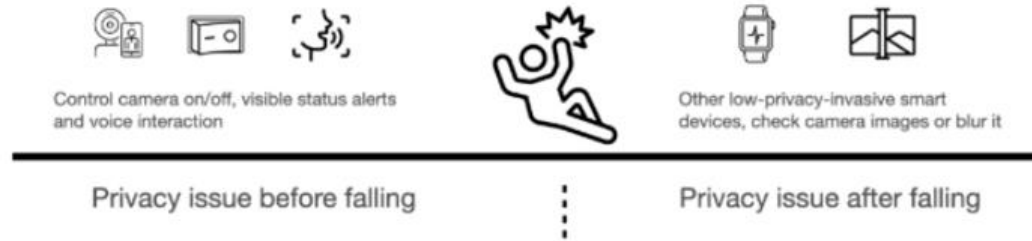
Type III

Steadfast rejection of camera (SRC)

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Focus Group



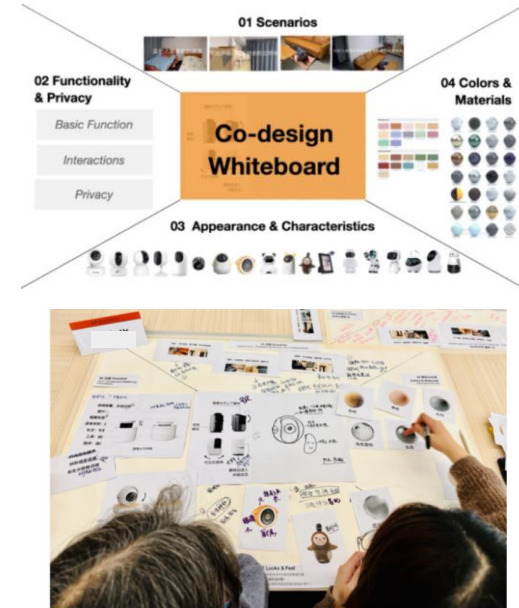
- To gain older adults' thoughts on the **key stages of fall detection and rescue**
- Scenario-based: **conscious** and **unconscious** after falls
- If conscious, **voice activation** is preferred, wearable device is a plus
- If unconscious, cameras should **automatically call** emergency contacts
- High-decibel alarms if poor network connections

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Co-Design Workshop

- To investigate how older users' privacy preferences influenced the design of home cameras
- Usage scenarios, functionality, appearance, and materials
- Developed ideal home camera prototypes



Co-designing with researchers in Whiteboard

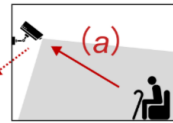
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Co-Design Workshop

Digital Privacy

Pictures and videos disclosure on the Internet



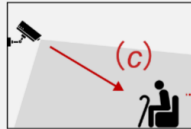
Psychological Privacy

Personal Information Privacy

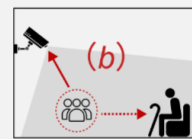
Sense of Dignity

Sense of Control

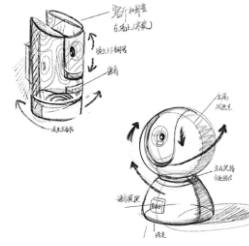
When the older adults have problems on cameras need to ask for help



When there are outsiders comes to the home and sees the camera

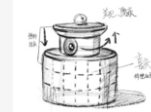


Perceptions of Older Adults towards Privacy



- Avoid cartoonish design
- Professional and reliable image, akin to doctor
- Integrated with home decoration

Simple and Practical



Beautiful and Hidden

- “The appearance of camera is expected to give people a sense of security. It can be used as a small decoration in the home, making outsiders not treat it as a camera”



- Not intrusive

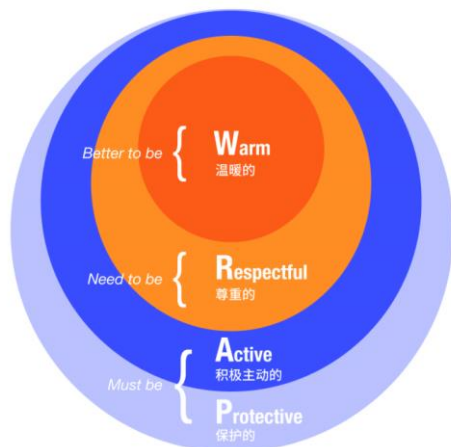
Lovely, Relaxing and Soothing

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Conclusion

***“Indoor falling is an accidental event,
but being watched by a home camera every day is an inevitable event for me.”***



PARW Model

Implications for Home Camera Privacy Design



Getting rid of the
old label



Assigning positive
value and meaning