MemeXerciser
Lifelogging Technology for People with Episodic Memory Impairment

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problem
Episodic memory impairment is common for over 26 million Alzheimer’s disease sufferers.
Lifelogging technologies generate an overwhelmingly large amount of data. How can we select and present these data as memory cues?

goals
Support episodic memory through active recollection
Promote mental exercise
Reduce caregiver burden

1 Passive Capture
Record personal experiences automatically using wearable sensors such as a camera, audio recorder, GPS logger, accelerometer, passive infrared, light, and temperature sensors.

2 Hybrid Selection
Automatically suggest cues from lifelog data based on content and context analysis such as movement, location, voice, and face detection. Leverage human (caregiver) expertise to select and annotate personally significant cues.

3 Active Review
Provide an engaging, memory-stimulating interaction to exercise memory abilities. Maximize opportunities to recognize and recollection experiential details on their own. Repeat reviewing without burdening caregiver.

evaluation results

preliminary findings
We conducted a pilot study with three participants with Mild Cognitive Impairment and their caregiver spouses. Using the MemeXerciser’s self-guided approach resulted in significantly (p<0.05) more details recalled and greater self-reported confidence in memory abilities when compared with using a passive approach where the patient listens to the caregiver describe the lifelog data.

Caregiver burden was also lower when using MemeXerciser’s hybrid cue selection approach but the difference did not reach statistical significance.

Our future work will focus on refining the content and context analysis techniques to further reduce the caregiver burden and improve the quality of cues for the patient.