Application Fields and Innovative Technologies

Egocentoric Snapshot-based Diary Generation Service for Elderly Memory Support H. Onishi, K. Kodama, T. Nakata, K. Yasuda, M. Nakamura, S. Chen. *Gerontechnology* 25(s)

Purpose The rapid progression of population aging has become a serious social issue, and memory impairment associated with dementia can significantly undermine independence in daily life, such as medication management, eating habits, and reduced social interaction. In recent years, the proportion of elderly people has been increasing year by year in many developed countries, including Japan, and the number of people with dementia is also on the rise. As a result, the importance of technologies that support memory while maintaining personal autonomy and assist in the continuation of daily life is growing even more. To address these challenges, our laboratory has developed the ("Anotoki Camera") system, which supports recalling daily events by recording snapshots from the user's field of view using a wearable camera and saving image tags generated through image analysis. However, there remains an issue that tag information attached to acquired images alone is not sufficient for recalling memories with context or emotion. This study aims to address this problem by developing a service that automatically generates diary entries in natural language format by inputting recorded images and tag information into generative AI. This allows elderly individuals themselves, as well as their families and caregivers, to obtain more concrete and emotionally rich information about daily events and situations through text that can later be searched and reviewed. **Method** Our approach consists of four steps: (1) capturing daily life using the wearable camera of ("Anotoki Camera"), (2) generating image tags for each captured image, (3) generating text using generative AI based on image and tag data, and (4) searching and viewing the generated texts. Specifically, (1) The wearable camera in the ("Anotoki Camera") system continuously captures images from the user's field of view during daily life. The system is designed so that similar scenes are not captured consecutively. (2) For each captured image, objects appearing in the image are extracted as keywords and saved as tags linked to the image in a database. (3) The extracted image and tag data are passed to generative AI at the end of each day to automatically generate one or two sentences describing each image. The generated texts are saved in chronological order together with the images in a database. Both elderly users themselves and authorized family members or caregivers can access these stored texts. (4) The generated texts can be searched and viewed by date, allowing them to be presented to elderly individuals as well as their families and caregivers for use in daily reflection and communication support. **Results and Discussion** As an evaluation experiment, participants wore the camera for several days to record their daily lives, and automatically generated diaries based on these records. As a result, it was confirmed that diaries for multiple days were successfully created. It was also confirmed that, by searching by date, all diary entries for the specified date could be displayed. Through this study, we aim not only to promote self-help for older adults, such as managing their daily routines and preventing missed medication, but also to support them from the perspective of mutual assistance by helping family members and caregivers more easily notice changes in their daily living conditions.
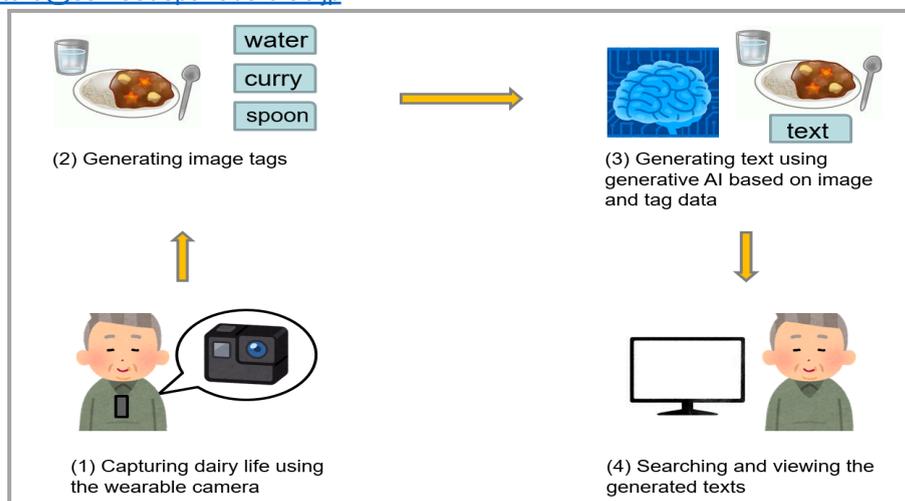
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(2) Generating image tags

(3) Generating text using generative AI based on image and tag data

(1) Capturing dairy life using the wearable camera

(4) Searching and viewing the generated texts

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Figure 1: System Architecture

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