



Supporting episodic memory from personal lifelog archives using SenseCam and contextual cues

Digital lifelogging technologies are making it increasingly viable for individuals to build personal information archives (PIAs) capturing digital

Yi Chen
Centre for Digital Video
Processing
School of Computing
Dublin City University
Dublin, Ireland
ychen@computing.dcu.ie

artifacts associated with events and activities from their lives. One of the most significant applications of PIAs is to act as a source of memory cues to trigger the data owner's episodic memory. An important components of this cueing function is provided by visual stimuli such as those provided by SenseCam.

Liadh Kelly
Centre for Digital Video
Processing
School of Computing
Dublin City University
Dublin, Ireland
lkelly@computing.dcu.ie

Previous work has demonstrated that an average day's SenseCam image data can be divided into around 20 events. While it is valuable in some situations to explore archives from specific days, it rapidly becomes unwieldy to manually navigate long term PIA collections. People may want to recall details from specific events or reminisce about certain aspects of their past. It is desirable that the images, which can serve these functions, be provided to them efficiently.

Gareth J. F. Jones
Centre for Digital Video
Processing
School of Computing
Dublin City University
Dublin, Ireland
gjones@computing.dcu.ie

To support users conveniently retrieving SenseCam images from their PIAs, we are developing a system which enables people either to search or browse for their required events or information based on what they are likely to remember. The system contains a search function, which enables users to search for events or episodes (clusters of images) by contextual features including their location, names of people around them at that time, weather, etc. The results are organized dynamically in a multi-level structure, based on what people tend to remember about events. A timeline based preview area is provided to enable people to quickly grasp the content in selected time period, and locate their target event on temporal dimension. Landmark events

represented by keyframe SenseCam images, together with text associated with context information such as name of location, people, and keywords extracted from computer activities (e.g. subject of emails, documents) are displayed along the timeline for the given period, acting as memory cues. From this high level preview users can zoom in to smaller time units based on these landmark events or other features that they recognize associated with their target episodes.

To develop the algorithm to automatically extract possibly good memory cues, we conducted an experiment to explore the features of SenseCam images and types of context information which tend to be good memory cues for people to recognize

and recall events. In this experiment, three research students who have been collecting PIAs including SenseCam data for 20 months performed cued recall tests for 30 episodes. SenseCam images and related context data which were extracted based on certain criteria (e.g. type, concept of the image, Galvanic Skin Response around the time the image was captured), were provided for the participants to uncover one by one until they believe that they could recall most of details of these episodes. They then verified their recollection against further data from their PIA. Our presentation will describe this experiment in detail, and introduce our integrated interactive search system for multi-level exploration of PIAs.