

Cognitive Modeling of Life Story: Reconstructing Our Memories from a Photo Library

Junya Morita
Nagoya University

Takatsugu Hirayama
Nagoya University

Kenji Mase
Nagoya University

Kazunori Yamada
Panasonic Corporation

Abstract: Assuming that photographs accumulated in a personal computer reflect life history of a user, a model of one's autobiographical memory could be constructed. Such a model will be useful to support memory problems caused by such as aging. Based on this idea, we constructed an image recommender system including an ACT-R model. We build the model using the first author's private photo library, consisting 3,202 photos. We run a simulation manipulating the activation noise of declarative chunks. As a result, we found strong influence of the noise on memory retrieval. When the noise level was low, the model retrieved a few memory items that occurred recently. On the other hand, when the noise level was high, the retrieval process was like random walk over a memory network. Repeated recalls of old photos occurred. The result suggests a condition of an ACT-R model enabling a travel into a distant past.