

PhoToDo: Image-Based Task Management System by Visual Trigger*

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ABSTRACT

Many people manage their tasks using tools such as notebooks or personal task management applications in their smartphones. In fact, according to Microsoft's research, 78% of respondents in the United States currently have at least one task management app [1]. However, conventional task lists are sometimes troublesome because tasks usually need to be expressed in words. In addition, it takes time to understand tasks when they are described in words. However, it is known that a person can instantaneously process an image and has the ability to process many images at once [2][3]. Therefore, we propose a system called "PhoToDo" that enables people to use visual images to manage tasks. By using PhoToDo, users can instantly visualize all their tasks and efficiently manage them. In this paper, we propose and implement our system and show its effectiveness by conducting experimental tests.

CCS CONCEPTS

• **Human-centered computing** → **Information visualization**; • **Human-centered computing** → Systems and tools for interaction design

KEYWORDS

Personal Information Management, Task Management, Visualization, Interaction Design

1 INTRODUCTION

A human's memory can be classified into three stages: sensory memory, short-term memory, and long-term memory [4]. Human brain can process information without overflowing because it efficiently sorts large amounts of information with the three memory processes. However, loss of information sometimes occurs when a brain is processing information for sorting memories between short-term memory and long-term memory. To avoid this problem, people use various methods of externalizing memory.

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Smartphone task management applications and notebooks are examples of things used to externalize memory. Many people use these tools to manage information they do not want to forget. Indeed, some of the task management applications available in Apple's App Store and Google Play have been downloaded over 10 million times worldwide.

Many notebooks and task management applications manage tasks using text information. Therefore, it is necessary for users to describe the contents of the tasks as text. For this reason, it takes more time and effort to write the information as the task needs to be explained in detail. Furthermore, it sometimes happens that users do not even register a task because it is troublesome to write or type it, and end up forgetting the task. In addition, the burden on the user increases as there are more tasks to register and sentences to grasp what each task is.

While text information having those problems described above, people cannot manage their tasks easily. However, with images, it is possible to record information by just taking a single photo. For example, one can just take a photo of a bookshelf with a smartphone camera so as not to buy the same book. Moreover, human characteristics explain the advantage of externalizing memory as an image. A human can process one image in as short a time as 13 ms [2]. In addition, people can process many images at once [3].

In this paper, we propose a method of managing tasks with images instead of text to reduce the burdens of task management. Managing tasks with images makes it possible to express tasks which is difficult to express in words, and the human ability to process information with images makes grasping a complete view of tasks quicker compared to doing so with text. Furthermore, arranging tasks by image sizes, filter processing, etc. improves readability and the ability to process tasks.

2 PhoToDo

We propose a method for expressing and managing tasks using images (e.g., photos) rather than a text-based method like using conventional notebooks or task management applications.

Task management generally requires functions to register a task, to delete a task, to display a list of tasks, to set importance and deadlines, etc. Therefore, registering tasks can be performed more quickly and easily using images rather than text. We can also manage many listed tasks and grasp all the contents due to the human ability to process many images instantaneously.

By taking advantage of these characteristics, it is possible to make tasks stand out by allowing the user to change the layout and the size of images freely along with the importance and urgency of each task.

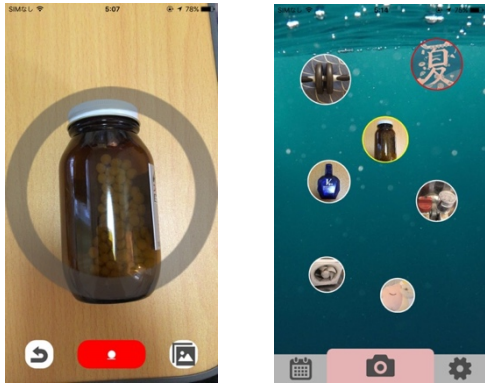


Figure 1: A screen capture of the camera mode (left) and the task view mode (right).

We implemented a prototype system that can manage tasks using images such as photos taken with a smartphone camera. The system environment was implemented as an iOS application using Swift. The application is composed of two different screens shown in Figure 1. The left image in Figure 1 shows a camera screen for registering a task as a photo taken with smartphone camera and the right image is a viewer screen for arranging the size of images and task orientation. Using this system, users can manage their tasks (such as “buy a new bulb” or “return the book to the library”) by just taking a pictures.

3 USER STUDY

We carried out a user study to investigate the users’ photographic subject tendency to register tasks using photos with the proposed system. Six participants (21~23-year-old college students) used our prototype system as a task management tool for about a month. We then collected their photos registered as tasks.

Table 1 shows the classification of the subjects of the photos collected by the experiment. The result shows that many participants used photos of objects related to tasks and used them as triggers to recall tasks.

Table 1: Photographic subjects in collected photos

Object	42
Text information	28
Website	22
File or software on computer	13
Chat or slide display on computer	10
Human or part of human	3
Scenery	3

Some examples of the collected photos are shown in Figure 2. The left image shows a book the user wanted to read, and the right images is a photo of a pair of broken earphones. The user took these

photos because they wanted to buy new ones. In this way, most tasks were expressed by taking photos of objects related to the tasks. The image in the middle in Figure 2 is a picture of a human face. This way of expressing a task with an image that is easy to remain in impression leads to not only recalling the task content but also the consciousness to it, and results in increase in motivation. The questionnaire after the experiment revealed that it is possible to express tasks with photos. There was even an opinion that the user registered more tasks with less importance or things they wanted to do with our system than with conventional text-based task management, in which those tasks are troublesome to describe and understand. In addition, the participants remembered the contents of 45 tasks out of 50 tasks expressed with images. These results show that photos can be used as task management with almost no problems.

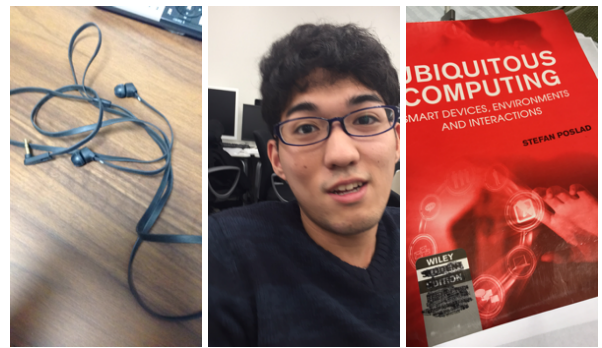


Figure 2: Example of the collected photos as tasks.

4 CONCLUSIONS

In this research, we proposed a task management method with images. We also implemented a prototype system to solve the problems of conventional text-based task management systems, such as describing tasks in words and taking more time to grasp what each task is as the number of tasks increases.

In the future, we are planning to conduct a long-term experimental test to check the usefulness of our method. In addition, we plan to compare the text-based and image-based task management systems to verify which method is easier to recall the task.

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