

Old'nGrey - application for PIM in a situation of multiple versions: the influence of using the application on retrieving the last version / Noga Dvir

Abstract

Personal information management (PIM) is a basic human-computer activity in which the same user saves and organizes the information as well as retrieves it later. Because hundreds of millions of users save and retrieve their personal information many times a day, even the smallest improvement in the human-computer interface can generate a significant improvement in their overall productivity and efficiency. One of the problems in PIM is the issue of multiple versions of the same file: users tend to create a considerable number of versions for the same file but are interested in retrieving only the last version. The users need to easily and quickly retrieve the recent version is not supported by current operating systems.

Bergman and his colleagues (Bergman et al., 2003; Bergman, Beyth-Marom, & Nachmias, 2008) developed a design for PIM systems - The User-Subjective Approach. According to this approach PIM systems should capture the subjective attributes given to the information item by the user and based on them enable the interaction of the user with the item when saving and retrieving it. The user-subjective approach offers several design principles one of them is the demotion principle. According to this principle information items with low importance for the user will be less visible, in order not to compete for the attention of the user, but still remains in their original context (as opposed to moving to archive). This principle is based on cognitive psychology studies that indicate that more visual distractors are adjacent to

the target file the longer time it will take to retrieve it (Neisser, 1964 ; Treisman & Gelade, 1980)

Based on the demotion principle the Old'nGray prototype was developed and it is examined in this research. Old'nGray demotes all the old versions of a file by graying out their icon, and by that differentiating them from the recent version which has a regular icon. The Old'nGray prototype works in the following way: it assigns a unique identifier tag to each file. Every file created, whether by using “copy” & “paste” actions or by “save as”, receives the same unique identifier tag as his original file. The result is a group of files all identified by the same unique tag. According to the last modification date of the files, the prototype creates a visual differentiation between versions: the last version has a regular icon while all previous versions will have a gray icon. This is the automatic demotion of all low importance items. The purpose of this research was to examine the effect of Old'nGray prototype on the retrieval of the recent version in a situation of multiple versions.

This is a quantitative study conducted as a within-subject design experiment. The participants were 60 students from the Department of Information Science at Bar-Ilan university, 42 women and 18 men their ages ranged between 21 to 58. The objective of the experiment was to collect performance data regarding retrieval tasks with and without the prototype, to compare the results and evaluate the effect using Old'nGray has on completion and success of the tasks. We created two identical sets of folders: one set in the regular surrounding of the computer, which will be the control condition of the experiment, and the second in a surrounding controlled by the Old'nGray prototype. Each set of folders contained two series A and B, in every one of them

there were three folders different in size: small, medium and large. Every participant was asked to perform 6 tasks to retrieve the last version of a file. Three tasks were conducted in one of the series (A or B) in the control condition – one task in every folder size (mall, medium, large) and three additional tasks were conducted in the other series (A or B) in a surrounding controlled by the Old'nGray prototype – one task in every folder size (mall, medium, large). In order to insure that the results of the retrieval tasks will not be effected by external factors besides the Old'nGray application, the procedure of the experiment was designed to counter-balance the content of the series, the order of the conditions and the order of folder size within each set

The research findings indicates that the use of Old'nGray enables participants to retrieve the recent file version more effectively. The average completion time of the retrieval task with Old'nGray was 6.56 sec. compared to 17.68 sec. in the control condition. Also the average failure rate was reduced significantly from 24% in the control condition to 4% when participants used Old'nGray. Findings show that folder size effects task completion time in both surroundings – the bigger the folder the more time is required to complete the task. But completion time when using Old'nGray was shorter than in the control condition for all folder sizes. In addition the use of Old'nGray reduces the effect of folder size on task completion – in the control condition every additional file added 1.63 sec and only 0.46 sec. when using Old'nGray. In regards to chronological sorting, participants used this option only half of the times in the control condition, when it was used failure percentage was lower – but this action is time consuming. The use of Old'nGray diminishes the need to chronological sorting.

Participants attitude toward Old'nGray were positive and 70% said that they would like this application in their operating system. Because current operating systems do not support the situation of multiple version, users are required to develop techniques and adapt strategies for coping. But this does not necessarily answer their needs or enable effective management of multiple versions. Research participants were asked to address the way they deal with multiple versions. The main techniques that were mentioned are meaningful file naming according to the change, the content or the date of the new version, using e-mail to transfer versions between co-writers or computers, or altogether avoiding creating new versions by continuing working on the same file. The participants mentioned that even using all these techniques they still struggle making sure they are always working on the last version. This study shows that the use of Old'nGray is significantly beneficent to the management of multiple versions especially when retrieving the last version. The participants in this study recognized the uniqueness and advantages of Old'nGray

In the field of PIM there is a need to expand the quantitative evaluation research of prototypes (Kljun et al., 2013) and this study is contributing to the research developed in the last decade. The findings of this research are a validation of the user-subjective approach in general and specifically to the problem of retrieving the recent version of a file. Beyond the theoretical contribution, the findings of this study can be used to improve the personal files display in next generation of operating systems.

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