

Desk Congest: Desktop Congesting Software for Desktop Clutter Congestion

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Abstract: The computer desktop environment is a working environment which can be likened unto a user's desk in homes and offices. Often times, the computer desktop get cluttered with files either as shortcuts used for quick links, files stored temporarily to be accessed later or just being dumped there for no vivid reasons. However, previous researches have shown that cluttered desktop affects user's productivity, and getting these files organized is a laborious task for most users. To be able to conveniently alleviate the effect clutters have on user's performances and productivity, there is need for third party software that will help get the desktop environment organized in a logical and efficient manner. It is to this end that desktop decongesting software is being designed and implemented, to help curb clutter problems which existing tools have only partially addressed. The system is designed using Visual Basic .Net and it proves to be effective in tackling desktop congestion problem.

Index Terms: Desktop, Desktop Metaphor, Clutter, Congestion, Decongestion

1 INTRODUCTION

For decades, desktop metaphor has been in existence and till date it has been featuring in most interaction environment. Its' initial aim was targeted at creating a working environment that is similar to that of user's desk in offices or homes [1]. Many times, the desk gets occupied with all sorts of materials, notebooks, textbooks, tools, pen and papers among others. Research has shown overtime that such a cluttered user's desk affects performance and usually has some realistic effect on the user's brain. Although, some researchers have also found that certain people need a bit of a mess in their surroundings to feel inspired and get work done. This means that, a clean desk to such people could be regarded as a dormant area where nothing serious or tangible is being undertaken [1][3][2]. The same picture is shared with the computer desktop environment. Document files could be accumulated on the computer desktop similar to how it does happen in the real world. As the document files are piled on the computer desktop, users would always locate and click on a particular icon to access it. While this was indeed the original notion, recent researches have shown that users now uses the desktop for a number of different purposes that includes: a quick access to the programs and files, for a temporary storage location where to find as many files as possible scattered on the desktop, while others use it as a reminder, as some files are placed on the desktop just for ease of remembrance [1][5]. Irrespective of what different people uses it for, having multiple document files on one's desktop makes it cluttered and cluttered such that all the various reasons for keeping such files would be defeated. Accessing a particular file or just locating it becomes a problem, as reasonable amount of time would be spent in doing so.

This definitely affects one's productivity and performance directly or indirectly. This is so because unnecessary time is being spent just on locating a file, rather than operating on it [1][2]. The emergence of Desktop Cleaner – a desktop cleanup wizard in Microsoft Windows Xp was the first of its kind in windows operating systems. Microsoft tried to curb the difficulties in dealing with clutters on user's desktops by incorporating this tool alongside the Windows Operating System [3]. The desktop cleaner can be set to run every 60 days to cleanup every unused desktop icon within this period of time. Being a wizard, it requires some background knowledge of the user to effectively configure it for use [3]. The process of getting the wizard to clean-up the desktop is quite laborious especially to the average users. As the wizard finishes, the unused shortcuts are moved into a predetermined folder named 'unused desktop shortcuts'. This software tool cannot be configured to the desire of the user and virtually everything has been predetermined by the manufacturers. A tool *Time Machine* was included in Mac OS X 10.5 when it was available in 2007. This tool can be set to keep a snapshot of all files on the user's computer, and it is mainly a backup utility which apart from storing the files also allows moving back in time to view changes. It was therefore useful for Personal Information Management, but cannot reduce clutters from the desktop (Apple Mac OS, 2007). In an attempt to reduce these complexities, many have devised means such as using folders to manually organize their document files on the desktop. While this to some extent proves effective, considerable amount of time is often being spent in getting files organized [15][9][7]. As a matter of fact, keeping the computer desktop well organized and logically arranged is obviously a task that only a few have the luxury of time to perform regularly. As a result, congested files on the desktop may become a source of distress to them. To this end, we seek to design and implement an enhanced version of desktop decongesting utility software that effectively tackles this problem of clutters on the computer desktop.

REVIEW OF RELATED WORKS

As affirmed by [12] [13], Clutter seems to be "visually distracting" and dizzying for most users of the computer systems and this seems to be the most common reason why they seek to re-arrange or organize their desktop. It is of interest to review first, the Desktop Cleaner in Microsoft

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Windows XP. Microsoft Windows XP came with a software tool incorporated that aims to reduce the number of unused icons on the desktop; called Desktop Cleaner. The Desktop Cleaner by default can be set to execute itself every 60 days to remove unused icons from the cluttered desktop environment to a predetermined destination folder. While this approach did relieve some desktop clutter problems, it has its short-comings and limitations. The user cannot customize the time period or the location for storing the unused icons. Also, the moved icons are simply dumped inside a single folder, making it difficult to trace any icon moved by the cleaner for any future reference. It also re-arranges the desktop after moving unused icons which usually changes the location of the remaining icons [13]. [8] presented a prototype Document Management System called "Presto". Presto provides rich interaction with documents by allowing grouping of documents in collections based on certain attributes. For the users to interact with these document groups, a generic browser is implemented called Vista. Vista looks like a traditional PC Desktop and it gives a generalized view of the document space. This browser can also be used to reduce icon clutter on the desktop, but demands extra effort from the user's end. A desktop metaphor called Lifestreams was introduced by [11] that functions as a diary of all the documents received or created by the user. Documents to be used in the future such as calendar items, reminders and to-do lists can also be stored using this tool. The major limitation of this tool is that documents' arrangement is uni-dimensional Tiles is a software tool with multiple capabilities. It allows users to view and manage applications with ease, by simply pointing to the edge of the windows screen. With tiles, one can easily drag any software, file or folder into its windows 8 styled sidebar. Users can loop through to view different set of icons or even navigate to find a particular software. It has other features that allow users customize to either left, right, top or bottom of the windows, also the behavior and its size can as well be customized. However, it does not effectively help to reduce clutter. Also, files must be dragged manually to its windows, and consume reasonable amount of time in searching for a particular file when multiple files are placed on it [10]. Sticks was also designed to organize the desktop with a fresh technology that uses the tab concept. Generally, it has three kinds of tab i.e. New Feeds, Navigator and Notes. The Navigator in addition to its usage for navigating through files can as well be used as a web browser. So, users can construct a folder within the tab and then drag files into it. One can right-click on a folder to move, by selecting "move to" and then specifying the destination folder. The tab usually hides the files that are place in it unless the user clicks on it to display them. Once the user is done using the files, he will again need to click on the tab to hide the documents. This helps to save much space on the desktop. However, similar to Tiles, the files must be dragged into it manually and many users may not have such a luxury of time to do that to every file [10]. Emerge Desktop is another tool that operates with a simple principle of restricting the ability to place files or folders on the desktop. When Emerge Desktop is installed in a system, immediately after the system reboots, it will hide all the files initially placed on the desktop, hence deny the user any privilege of placing new files on the desktop. In order to access those files, the user will need to right-click on the

desktop environment to use a menu in trying to locate and access any file which was initially on the desktop. Apart from this restriction, it has other useful features which were incorporated into it. While this is an interesting tool, the idea is not welcome by many users, as it completely denies users the usefulness of the computer desktop [10]. Clean Desk is a windows service tool that moves files/icons from the user's desktop into a pre-specified destination. It also has some additional features such as organizing the files according to certain pre-specified pattern into folders. It can be customize to run either as the system shuts down or at start-up. The major undoing of this tool is that, it does not have any user interface with which users can interact with the program, since it runs as a windows service at the background. Also, it can only be used by users using Local Account, but not Guest nor Administrator Accounts [6]. Fences [14] is another software that helps to automatically organise the desktop shortcuts and icons. It places them into resizable shaded area on the desktop called fences. Considering the different desktop decongestion tools reviewed above, it is evident that for a better desktop organization, it might be intelligent to choose multiple customization tools, since none of them can effectively meet the user's preferences. However, embracing a number of these tools could have its own side effect, as it could become a way of burdening one's windows and making it to crash easily, because some of these software could have conflicting functions with each other [10]. This among other reasons becomes the motivating factor that facilitate the development of a new software tool that will be uncomplicated but effective enough to meeting the needs of must users as it affects proper desktop organization.

SYSTEM DESIGN

This involves the process of defining the architecture, components, module, interface and the data structure for the required system. The system that is designed has the following features: The software can be executed at any time the user desires. The user will have the privilege of specifying the destination directory for the moved files. Moved files will be logically organized based on certain chosen categories e.g. Word document files, text files, Pdf files, or Shortcut Icons. The user can determine the category of files to be moved as well as those not to be moved, by marking or unmarking the various categories respectively. Moved files can be restored back to the desktop at any time the user desires by clicking and dragging them to the desktop. The speed of execution is very fast, irrespective of the file sizes. A user-friendly GUI is also provided. More than just the unused shortcuts, the user can as well move files and folders to the specified destination in order to have a less congested desktop environment. The moved files once logically arranged into folders will ease searching and accessing a particular file.

ARCHITECTURAL DESIGN

The architecture design shows the interaction between the components that makes the system functional. This is shown in Figure 1.

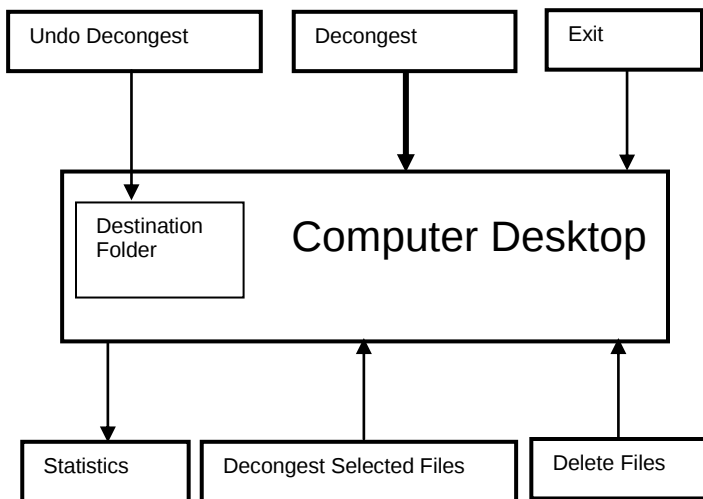


Figure 1: Architecture design

IMPLEMENTATION

Microsoft Visual Basic .NET 2008 version was used for the implementation of the system. Visual Basic .NET is used to provide the suitable Graphic User Interface (GUI) for the program, coupled with its flexibility, high level of efficiency, simplicity, object-oriented capabilities and user friendliness. The interface design focuses on the user's experience and interaction. The goal is to make the user's interaction with the program as simple and efficient as possible in terms of accomplishing user goals (often called the user centered design) i.e. a menu driven user interface that gives much flexibility and make the program easy to operate by the user. Figure 2 below shows the interface for the user to perform the necessary operations. This makes choosing the destination folder where the decongested files will be stored, selection of which type of file(s) categories to decongest and any other action that the user may want to perform much easier.

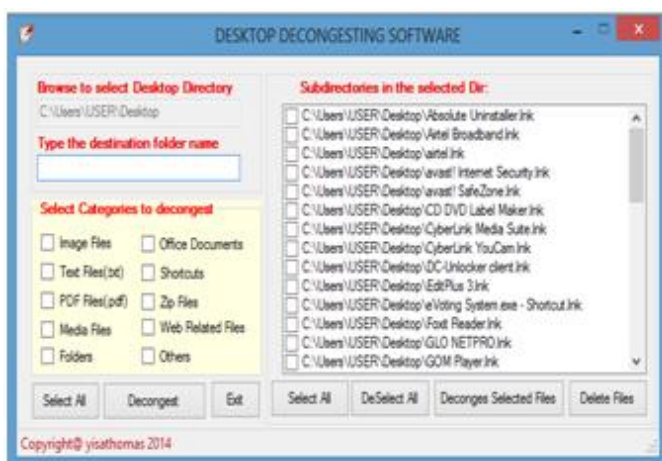


Figure 2: Interface Design



Figure 4: Desktop window before Decongestion

EVALUATION

Every programming task is aimed at developing an error free application which will meet the user's specification. It will be disastrous leaving any processing job to the computer without first ascertaining whether accurate result will be generated or not. The new system was tested and debugged to correct all errors that were



Figure 4: Desktop window after Decongestion

Identified. Although, the task of developing an error free application is difficult and seems almost impossible, the new system is certified to have met the desired specification. The application was evaluated on different windows platform of Windows 7 and Windows 8 operating systems. All the categories and modules worked to expectation. As a part of the testing technique, the software was given to various users for proper testing and evaluation of its performance. A snapshot of the obtained output is shown. Figure 3 shows the desktop window before the software was run. There a lot of icons and files cluttered on the desktop. However, Figure 4 shows the desktop window after the software was used. All the selected files have been arranged on a folder automatically under different file types. More so, System Usability Scale (SUS) was used in testing

the usability of the application. SUS is a reliable, low-cost usability scale that can be used for global assessments of systems usability. It is based on ten-item scale giving a global view of subjective assessment of usability. The testing spanned a period of about four weeks. Fourteen users were involved in the test. At the end of the testing, the testers were asked to fill the SUS questionnaire to rate the application. A performance rating of 80.89% was obtained in the course of analysing the data. This shows that the users are actually satisfied with the system.

CONCLUSION

This research work presents the desktop decongesting software, which aims to provide new capabilities and functionalities not found in the existing systems. The software meets the design goals and operates in a fast and efficient manner. While there is every tendency that not all users would be that satisfied with this approach, it is believed that all the users that used it for the purpose of evaluation found it quite encouraging and sees it as a most have utility software in their systems. In IT, one general desirable goal is productivity. Having identified earlier the discomfort cause by clutters on our computer desktops and the eventual effect they have on individual's performance and productivity, also with the fact that most users do not have the luxury of time to manually organize their desktops, it can be concluded that this Desktop Decongesting Software is a useful tool for every productive – minded users of windows based computer systems.

FUTURE WORK

In the field of programming, it is rarely possible to develop software that is complete without any defect or shortcomings. This could be attributed to so many factors in the form of time and technical knowhow of the researcher. Some of the short-comings of the new system are highlighted below:

- i. The system is designed to move files and logically organize them according to their categories using the file extension as criterion. But it is almost impossible to specify all file extensions in existence.
- ii. The system does not keep any record of previous decongestion processes in the form of date or time for any future reference or in case there is need for a recovery.

Further work can be done to improve on this system with regard to the shortcomings highlighted above.

REFERENCES

- [1] G. Lepouras, A. Papatriantafyllou, A. Katifori & A.J. Dix. "Time2Hide: Spatial Searches and clutter alleviation for the desktop". AVI'08 proceedings of working conference on advanced visual interfaces . 2008, pp355-358
- [2] Technology Advise for Small business." Dealing with desktop clutter". [online] 2014 <http://www.techAdvisory.org> (Accessed 20July, 2014)
- [3] Microsoft Support [online] 2013 <http://www.support.microsoft.com> , (Accessed 20 July, 2014)
- [4] Apple Mac OS X 10.5 Leopard Time Machine. [online] 2007 <http://www.apple.com/macosx/leopard/features/timemachine.html> (Accessed 7 July, 2014)
- [5] Barreau, D., and Nardi, B." Finding and Reminding: File Organization from theDesktop" . SIGCHI Bull. 27, 3 , 2005, Pp. 39–43.
- [6] A. Britto,. : "CleanDesk - A Windows Service that keeps your desktop clean" 2010.
- [7] A. Couch, " How To Clean Up Your Windows Desktop Once and For All." 2012 [online] <http://www.makeuseof.com/tag/clean-up-your-windows-desktop-once-and-for-all/> (Accessed:7 July, 2014)
- [8] P. Dourish, W.K. Edwards, A. LaMarca, M.Salisbury): " Presto: An Experimental Architecture for Fluid Interactive Document Spaces". ACM Trans. Computer.-Human Interaction. vol6(2), 1999, Pp. 133-161.
- [9] J. Elliott,"Guides to Having an Organized and Clean Computer Desktop." , 2014.
- [10] A. Falcon : " Top 10 Desktop Customization Tools for Cleaner Windows" . 2013, <http://www.hongkiat.com/blog/desktop-customization-tools/> Accessed (7 July, 2014)
- [11] E. Freeman, D. Gelernter, D., : "Lifestreams: A Storage for Personal Data" SIGMOD Record, Volume 25, Number 1, 1996 Pages 80-86.
- [12] A. Kamaruddin, A. Dix. "Understanding Physicality on Desktop: Preliminary Results. Physicality" 2006, 6-7th February, 2006, Lancaster.
- [13] P. Ravasio, S. Guttormsen, H. Krueger, H. "In Pursuit of Desktop Evolution: User Problems and Practices With Modern Desktop Systems." ACM Computer-Human Interaction, 2004 .Vol. 11, No. 2nd, June 2004
- [14] Automatically Organise your desktop and icons with Fences [online] 2014, <http://www.stardock.com/products/fences/> (Accessed: 30 July,