Paper: The Image of the Interface: How People Use Landmarks to Develop Spatial Memory of Commands in Graphical Interfaces

Citation: Md. S. Uddin and C. Gutwin. 2021. T*he Image of the Interface: How People Use Landmarks to Develop Spatial Memory of Commands in Graphical Interfaces*. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21). Association for Computing Machinery, New York, NY, USA, Article 515, 1–17. DOI:https://doi.org/10.1145/3411764.3445050

Abstract: Graphical User Interfaces present commands at particular locations, arranged in menus, toolbars, and ribbons. One hallmark of expertise with a GUI is that experts know the locations of commonly-used commands, such that they can find them quickly and without search- ing. Although GUIs have been studied for many years, however, there is still little known about how this spatial location memory develops, or how designers can make interfaces more memorable. One of the main ways that people remember locations in the real world is landmarks – so we carried out a study to investigate how users remember commands and navigate in four common applications (Word, Facebook, Reader, and Photoshop). Our study revealed that people strongly rely on landmarks that are readily available in the interface (e.g., layout, corners, and edges) to orient themselves and remember commands. We provide new evidence that landmarks can aid spatial memory and expertise development with an inter- face, and guidelines for designers to improve the memorability of future GUIs.

The main contribution of the paper is the empirical analysis given to GUI (graphical user interfaces) landmarks or elements that exist in the design that provide for better recall of graphical commands (e.g., paste). The use of landmarks is analyzed through interview results obtained from asking 20 users to recall graphical elements on the GUI that represent commands, among 4 different interfaces (i.e., Microsoft Word, Facebook, Adobe Acrobat Reader, and Adobe Photoshop). From these interviews several questions are raised like "Describe the interface of ___. What are the commands or tools available, and where are they located in the interface?" Which are questions that are used by the interviewers to further

document the recall ability of the participants. From the interviews several conclusions are drawn, for example "Include landmarks in GUIs to support better recall." And "Interfaces should facilitate both recognition and recall." These contributions are relevant to the class because it offers new perspective about the graphic design needed to make more engaging and recallable interfaces, the analysis offered in this paper is important because it offers guidelines of what worked and what didn't among many all the different interfaces, like boxing of options, creating columns of icons, etc. And what did not work like changing the position of elements in the GUI based on the scale of the interface, among other conclusions.