Chapter 3
Interface Design

ABSTRACT

User interface (UI) design is the process of making interfaces in software or computerized devices with a focus on looks or style. Designers aim to create designs users will find easy to use and pleasurable. IU design typically refers to graphical user interfaces but also includes others, such as voice-controlled ones. In this chapter, the user interface design and the grounded learning theories are discussed. Next, the interaction styles and the types of interactions are discussed. The usability benchmark and the usability evaluation instruments are also discussed in this chapter.

USER INTERFACE DESIGN

User interface is defined as the part of computer system with which a user interacts in order to undertake his or her tasks and achieve his or her goal (Stone et al., 2005). It is the bridge between the world of computer system and the world of the user. It is widely acknowledged by researchers (Norman, 2013; Shneiderman et al., 2017) that good interfaces ought to satisfy the principle of visibility: (a) users should be able to 'see' the actions that are open to them at every choice point, (b) they should receive immediate feedback about the actions they have just taken – since few things upset computer users more than not knowing what a computer is doing when it seems to be churning

unexpectedly, and (c) they should get timely and insightful information about the consequences of their actions.

Unfortunately, many system developers have over emphasized on the technical functionalities of the user interface design thus neglected the usability aspects of the interface design. These efforts violate the initial purpose of the interface design that user is essential in this field (Atoum & Bong, 2015; Maguire, 2013; Manresa-Yee et al., 2010; Norman, 1999). As stated by Luostarinen et al. (2010), the user interface design is often heavily based on the technical properties of the devices thus cause the usability related issues to be forgotten or totally dismissed in the design process. This is in line with the argument by Maguire (2013) that many systems are hard to use which leads to poor user experience by causing people to abandon the system or fail to use the system effectively. Therefore, the goals for a good human-computer interaction are to decrease the errors, increase satisfaction for the user, and better performance of machine-assisted tasks (Manresa-Yee et al., 2010).

Designing a user interface with good usability is a challenging task. Fortunately, many interface design practitioners did propose the guidelines for good interface design. Shneiderman's Eight Golden Rules of Interface Design suggests the following guidelines for the practitioner as follow (Shneiderman et al., 2017):

1. Strive for consistency
2. Enable frequent users to use shortcuts
3. Offer information feedback
4. Design dialog to yield closure
5. Offer simple error handling
6. Permit easy reversal of actions
7. Support internal locus of control
8. Reduce short-term memory load

Jacob Nielsen's ten usability heuristics also serve as the basic reference for all user interface design (Nielsen, 1995) listed in Table 1. Nielsen stressed in his article that these ten principles are called "heuristic" because they should be treated as broad rules of thumb not specific usability guidelines. Although the Nielsen and Shneiderman's interface design guidelines can act as the generic reference for all the user interface system design, however, Gong

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