SOFTWARE USABILITY DOCUMENT

CS346: SOFTWARE ENGINEERING LABORATORY

Group 11
Project 7: Paint Application

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1 Shneiderman's Eight Golden Rules

We have highlighted the usability of our Paint Application using the eight golden rules of Shneiderman.

1.1 Strive for Consistency

People spend most of their time using other similar products and their experiences with those products set their expectations. It can frustrate our user if our design is inconsistent and not familiar to users.

1. **Internal Consistency** - We should maintain consistency within our software.
    a) **Toolbox:** In every mode whether it is freestyle mode, image practicing mode or game mode - the toolbox provided to the user to draw is same, with positions of different tools (pencil, eraser, brush, colour) being also same, so user don't have to remember in which mode, the pencil is where.
    b) **Process:** In every mode, the user has to first select drawing mode and then the image to draw, after this toolbox will appear on the screen. This is to maintain consistency in different modes.
2. **External Consistency** - Follow established industry conventions.
    a) **Icons:** Different icons used in our application, are those used worldwide.
        i. The **Game Mode** icon has a symbol of joystick which indicates it is a game to play.
        ii. The **Delete** icon has a symbol of dustbin which helps the user to identify its operation just by looking at it.
        iii. The **Pencil/Eraser/Brush** icon resembles those that we use in our daily life. This will help users to show his/her art without any confusion.

1.2 Design for Universal Usability

Recognize the needs of diverse users and design, facilitating the transformation of content.

1. **Internal Consistency** - We should maintain consistency within our software.
    a) **For the First Time Users:** We are providing tutorials on how to use the app.

b) **For the Novice Painters:** We are providing practice mode with template images for references.

c) **For Expert Users:** We have game mode to test their painting skills and share image options to show their creativity to others.

We are also providing shortcuts to various functions, like a user can long press an image to delete and can drag it to the delete icon to delete it. Expert users will be more frequent in using this option to delete the image compared to novice users.

1.3 Offer Informative Feedback

The design should always keep users informed about what is going on.

1. **Continuous Feedback:** For the long processes users will be continuously given with the status of the process. Example: For the Save Image process, user will be presented with the percentage of the image saved at any moment.

2. **Human Understandable Reactions:** For minor actions by the user the response will be modest. Example: Suppose the user was using pencil initially, now he/she chooses the eraser option, then their pointer/cursor will change from pencil to eraser. Or say the user changes the colour of the brush from red to green using the color option from Toolbox, then the tip of the brush changes from red colour to green colour.

1.4 Design Dialogues to Yield Closure

Informative feedback after a group of actions gives operators the satisfaction of accomplishment, a sense of relief, the signal to drop contingency plans from their minds and a signal to prepare for the next group of actions.

1. **Update User with Notification:** Whenever users finish a process they will be notified that the process is completed. For example: When a user selects a level(say level 4) in the game mode, he/she will be notified with the message Level 4 is selected or when a user deletes an image, he/she will see a confirmation message after the image is deleted.

1.5 Offer Error Prevention and Simple Error Handling

We should either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the actions. When error occurs, users should be provided with simple, step-by-step instructions to solve the problem as quickly and painlessly as possible.

1. **Level Selection:** Whenever a level is chosen that is not yet unlocked, an appropriate message: "Level not yet unlocked: Finish previous level to unlock it" will be

displayed accordingly. In this the user is provided with a simple solution to unlock this level and he/she is prompted to select another level which has been unlocked previously.

2. **Undo:** For minor actions by the user the response will be modest. For example: Suppose the user was using pencil initially, now he/she chooses the eraser option, then their pointer/cursor will change from pencil to eraser. Or, say the user changes the colour of the brush from red to green using the color option from Toolbox, then the tip of the brush changes from red colour to green colour.

1.6 Permit Easy Reversal of Actions

This feature relieves anxiety since the user knows that errors can be undone; it thus encourages exploration of unfamiliar options.
To permit the reversal of actions we are including many easily accessible features, such as

1. **Undo Button:** Many times users perform certain actions by mistake, this option will allow the user to reverse those actions.

2. **Back Button:** This option provides user freedom to reverse the changes made by selecting the wrong option. Example: Suppose a user wants to enter the Game Mode but by mistake he/she selects Practice Mode, then, the back button permits easy reversal of this wrong action.

1.7 Keep the User in Control

Experienced users strongly desire the sense that they are in charge of the interface and that the interface responds to their actions. They don't want surprises or changes in familiar behaviour. Make users the initiators of actions rather than the responders to actions.

1. **Confirm or Delete Message:** When the user deletes a particular or a collection of images, he/she is provided with the permission dialogue to confirm the delete operation with two options - "Delete/Do not Delete", making the user feel as initiators of action.

2. **Save Image:** When the user finishes drawing, he/she wants to save his/her drawing, on clicking the "Save" icon, the user is provided with the confirmation dialogue to confirm the action with two options - "Save/Do not Save" making the user feel as in charge of the interface.

1.8 Reduce short term memory load

The limitation of human information processing in short term memory requires that display be kept simple. Keeping our interface consistent will help us to make our design more intuitive so our user doesn't have to call every time he/she uses the product. It's simpler for us to recognize information rather than recall it. In the toolbox

1. **Pencil icon** - which looks like a real pencil which we use in daily life.
2. **Eraser icon** - resembles a real eraser.
3. **Brush icon** - resembles a real brush used to draw pictures.
4. **Back button** - which is made up of "⇐" sign.
5. **Undo icon** - which looks like "↶" sign.

All these visual elements are easy to recognize because they resemble real-world things that serve the same purpose.