BRIEF ARTICLE

THE AUTHOR

1. Objective

The purpose of this practical is to design and implement a standalone image annotation application that satisfies the following User requirements:

- User friendly way of opening an image
- User friendly way of editing, adding and deleting image labels and selecting corresponding image areas
- User friendly way of saving and loading the label set
- The interface is easy to use
- The interface allow fast processing of large number of images
- The layout uses affordances to guide users.

2. Obtaining data

Before designing and defining the functional specification of our system, we first analysed the existing system "$LabelMe$" to gain insights on what areas has this web based tool been successful and on what areas has it failed to cope the usability requirements.

Upon careful analysis, we have found the following usability problems associated with "Label Me" tool:

(1) For each annotated polygon the tool provides a different color. Although this allows the users to distinguish between landmarks, the use of different colors at times make it difficult for a user to locate a particular landmark **instantly** when he/ she places his cursor on a particular label situated on the right side of the screen.

(2) It is not clear on first sight on how to undo a step or sequence of steps when annotating a landmark in the current image. Renaming the *Erase* button to *Undo* will definitely provide better navigation control for a first time user. Plus, the user has no means to redo some of his previous steps

(3) One of the main disadvantages that we have found is that the tool does not provide any means for a user to save his work and progress to a different image. The inability to move between different projects hence makes the tool less appealing to potential users.

(4) Another flaw that we encountered during our analysis is in the use of the *Zoom Buttons*. The user is not allowed to zoom any portion of the annotated image when he/she is in the process of creating a polygon. This restriction is totally redundant and only puts more unnecessary on how the user can interact with the tool.

(5) To edit a polygon, the user is required to click in a specific region inside the polygon. Since the region is not specified, needless time and effort has to be spent on locating this region. In addition, the tool does not provide any options to **add new points** or remove points from an existing saved polygon.

Apart from the cons , the "Label Me " provides a user with a range of functionalities :

- It allows user to label particular landmarks in an image.
- The landmarks are annotated with different colors, thus making it easily to differentiate between different landmarks.
- As soon as a user puts his cursor on a particular label, the polygon associated with the label is highlighted ,hence making it easy to identify that particular landmark.
- The editing tools provided by 'Label Me " allows the user to adjust the shape and location of the polygons.

3. Design and Implementation Process

The design of our interface consists of a bottom up approach. To be more elaborate, we have divided the design and implementation stages into 3 layers(show in figure 1).

Hence, our aim has been to develop an initial primitive interface and then add higher functionalities at each stage/layer hence extending the range of user capabilities . In our methodology, prior to the implementation process of each layer, we have applied task analysis and phototype evaluation to evaluate the practicality of our designs. We have attempted to follow a combination of Shneiderman' and Neilsans HCi design rules for all the 3 stages. The rules that we have taken into consideration are as follows:

(1) Enable frequent users to use shortcuts

(2) Offer informative feedback

(3) Design dialogs to yield closure

(4) Offer error prevention and simple error handling

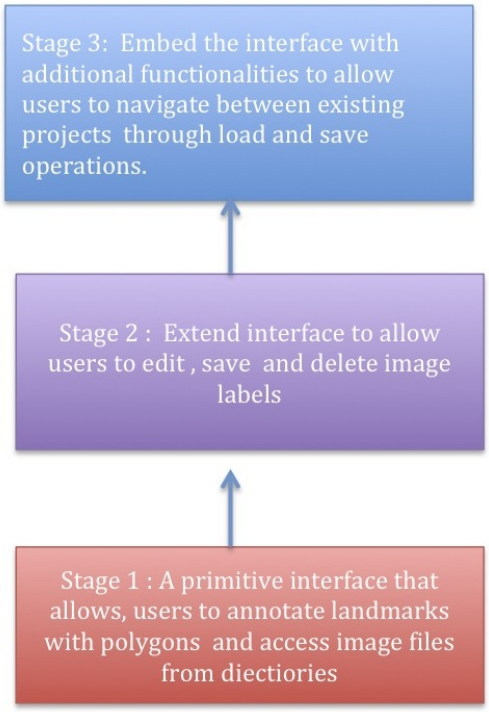

FIGURE 1

(5) Permit easy reversal of actions

(6) Match between system and the real world

(7) User control and freedom