People-Centered Design Research Presentation

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Paper Title: Improving Gestures and Interaction Techniques for Pen-Based user Interfaces

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Abstract/Background

This paper is about the problems involved in the gesture recognition in the pen-based interfaces and two possible solutions of improving the gesture designs and Interaction techniques to address them. Existing users are burdened by the unreliable gesture recognition and have difficulty in learning and remembering the gestures.

The paper focuses on improvement in two main areas: ease of operation for end users and ease of creation for designers and programmers.

The author mainly targets the UI and the improvement techniques to develop a user-friendly interface.

Abstract/Background Con't...

The paper talks about the interface designs, gesture recognition and the tools used for it, which are not included in our lectures.

Innovations/Ideas

- Advantages of gestures:
  - specify the operator and operand in single stroke
  - they are iconic(easy to remember than text commands)
- However it is used by very less group of people due to its limitations in accurate gesture recognition.
- According to the survey, there are four major problems users face with gestures:
  - user may not know that the operation is available
  - user knows that the operation is available but doesn't know if it can be invoked with a gesture
  - user cannot remember the gesture
  - user hesitate to use because computer misrecognizes it.

Innovation/Ideas Con't..

- Two approaches to solve the problem:
    - Gesture set design tool
    - New Interaction techniques

Gesture set design tool:
- will help the designers to create the gestures that are easier for users to learn and understand and more accurately recognized by computer
- will provide a feedback if any gestures are ambiguous
- will indicate if two are more gestures are confused by users by comparing new gestures with a database of known gestures and their meanings.

Innovation/Ideas Con't..

New   Interaction   techniques:
   - showing near matches when system misrecognizes a gesture
   - eager recognition which is ability to recognize a gesture before it is completely   drawn
   - gesture will animate when the operation corresponding to that is invoked by other means.

Results and future work

- The tool was evaluated to determine the improvement in gesture recognition accuracy by comparing an existing gesture set with the same set after it has been improved using the tool and also the learnability and memorability of the old and new sets.
- The new interaction techniques were compared with traditional techniques and evaluated based on some user groups.

Future work- MAGIC: A motion gesture design tool @2010.

Educated opinion and discussion

- It is amazing to know that the developments in the gesture technology dates back to as early as 1998.
- Author did several surveys to reach to the core of the problem and discussed in a factual way.
- I believe the two solutions proposed in the paper would have helped the author to address the problems in a precise manner.
- Currently we see many devices on the technology discussed in the paper. It has carried a positive impact on the society and is still on the verge of improvement.
- For example, the pen based gestures moved to more advanced motion gestures. This can help people who cannot even write.

Paper Title: Design guidelines of a tool to help Blind authors independently format their Word documents

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Abstract/Background

Most of the work on document creators for blind people concentrates on the document writing than document formatting. The work of blind people is treated dismissively as they do not match the expected format standards. They often take support from the sighted people for this reason.

The paper introduces few guidelines for developing a new formatting tool for the blind people based on the expectations of sighted people and problems experienced by the blind people.

Authors have developed a prototype of the tool to test and come up with more guidelines.

Abstract/Background Con't..

Keywords: UI, North star customer, Affinity diagrams, Assistive technology, Screen readers.

Authors focussed mainly on the blind people which are their North-star customer and drew few conclusions based on the affinity diagrams. They worked on improving the UI with an Assistive technology to help the blind people format their word documents.

Innovation/Ideas

At the beginning, two major studies were made:
- Study of formatting techniques and Expectations of Sighted people
- Interviews with Blind people.

Study of formatting techniques and Expectations of Sighted people:
Interviews on the sighted people gave the following expectations for a good document:

- positioning of the text(whitespaces,layout)
- font(size,color,style)
- need to look 'professional' and 'easy on the eye'

Innovation/Ideas Con't..

Interviews with Blind people:
Through these interviews, the problems faced by blind people were noted as follows:

- screen readers are not helpful for formatting
- formatting strategies(linear, autocorrect by word)
- provide suggestions rather than auto correcting them

By using the Affinity diagramming, authors came to few proposed guidelines based on the two interviews:

- check the document in a linear top-down approach and the functions must be callable with simple shortcut keys
- option to ignore, change or correct the formatted occurrences in real time

Innovation/Ideas Con't..

- must be accessible and available anytime and from anywhere inside a word processor
- provide a notification when word processor changes the format automatically
- provide and explain templates for various document types(resume, essay)

Few guidelines were added after testing with the prototypes:
- use different voices for screen readers to distinguish between formatting info and document content
- allow users to ignore few words as formatting errors
- provide option to correct only a subset of formatting incidences(only bolded letters)

Results and Future works

- This paper contributes a better understanding of the formatting problems that blind authors experience and the insight into the guidelines which can be used to develop tools to mitigate this problem.
- The paper also gave the theme conclusions which can be used not only for blind people but also in the general contexts.
- Guidelines found from the prototype have not been implemented, and will be added in the next versions of the tool.
- Need long-term study with the tool.

Education opinion and discussion

- The problem of formatting for blind people might look small but it has great effect on making a document 'good' to 'worse'.
- Studies conducted on sighted people gave the expectations of a good document and the interviews on the blind people throwed light on the problems they face while formatting.
- The summary guidelines included almost every functionality needed in the tool.
- The prototype testing I felt was important as it gave rise to few more requirements that have to be included.
- The tool if developed, will make the blind people more confident in their written works.

Comparison

- Both the papers focussed on developing the user friendly interface. While first paper had a general scope, the second paper mainly targeted one customer group(blind people).
- In my opinion, the work on Gestures is more successful as it is still a trending subject now, even after many years and also many advancements came up in this field.
- After going through these papers, my interest grew in the Motion detection gestures. It will be remarkable to see if the computer differentiates the normal human motion to that of the gesture motion.

References

Pic 1:
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Pic 2:
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