SnakeWindows: A New Way to Manage Windows on AR Glasses

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Introduction / Related work

The user interfaces design for the AR glasses still follow the design guidelines for PC and mobile. Like Hololens still keep the main layout as before.(Figure 1) Put content into one box with adjusting buttons on the top.

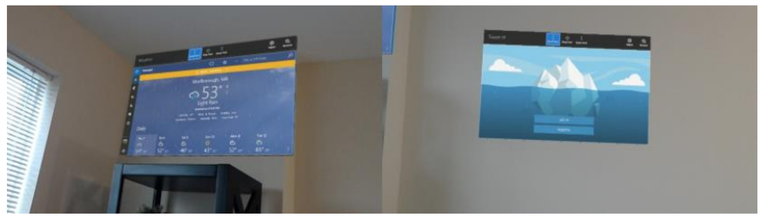


Figure 1: Hololens windows example.

Therefore, we intend to improve the windows management on AR glasses. Base on the technology, Snake Windows mainly works with gaze and gesture controls.

The concept of windows

In this paper, we abandon page jumping by change content. We use windows line to indicate page level. Put multi-level pages in the space at the same time.

When the user opens a software, the home page will show in the middle of the front. When content goes to the next, the next page will show in the middle of the front, and the home page moves to the left, and so on. The pages in one task flow stay in one line with very slight lines link between them(Figure 2).

The association will be enhanced when the window in the process of moving. When close a page, the pages following behind will be closed as well.

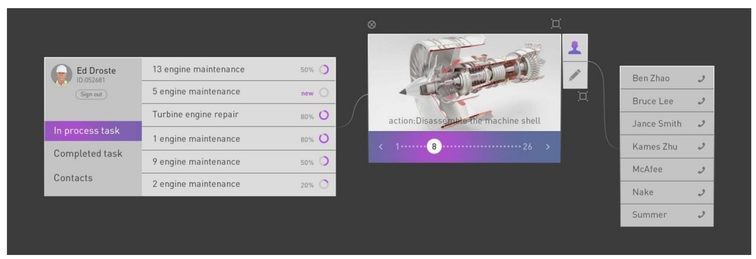


Figure 2: An example of SnakeWindows - remote assistance.

Windows management

We propose a new way to manage the windows. and the way to manage them also needs to adjust. We provide a windows management button which allows the user to quickly gather the windows belonging to an application, and the windows of each application will be piled behind the application icons (Figure 3).

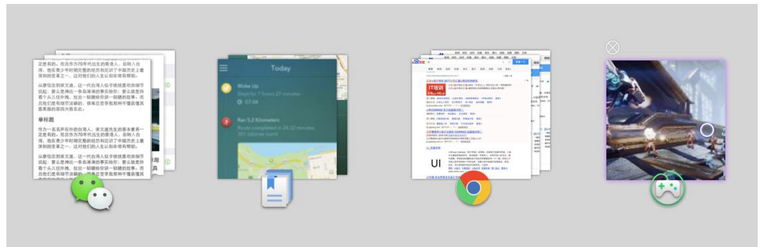


Figure 3: Manager of application windows.

If the users gaze focuses on a windows group, the windows will be spread for further operations (Figure 4). In particular, a window can be selected to open or close easily.

Figure 4: Presentation of multiple windows in an application

In addition, the windows of an application may be distributed in space. We offer a link-link button beside each window. By clicking it, the related windows will be attached to the active window (Figure 5).

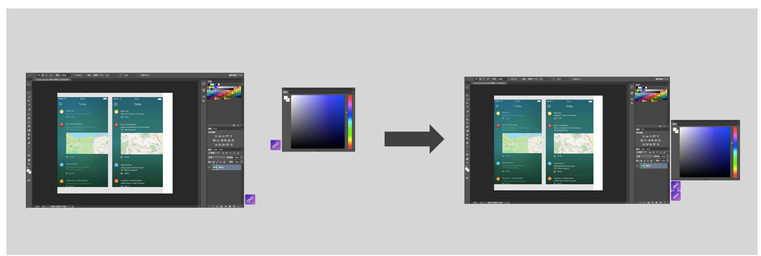
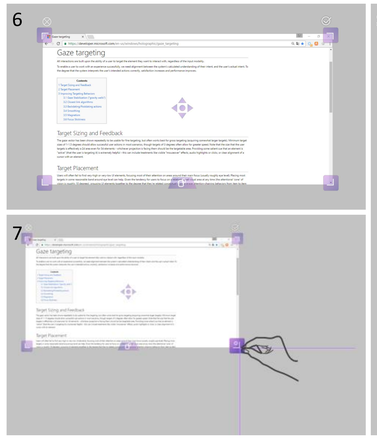


Figure 5: "link-link" button to cluster the related windows.

Windows adjustment

After clicking adjustment button, the editing mode will be activated. The system will reduce the brightness and highlight the controls (Figure 6). These buttons are used to adjust the window size (Figure 7), window position and the distance (Figure 8). It translates a non-intuitive operation along Z-axis to the vertical adjustment on a 2D plane.

It is worth noting that the visual guides appear in the process of adjustment, which provides real-time feedback to the user.



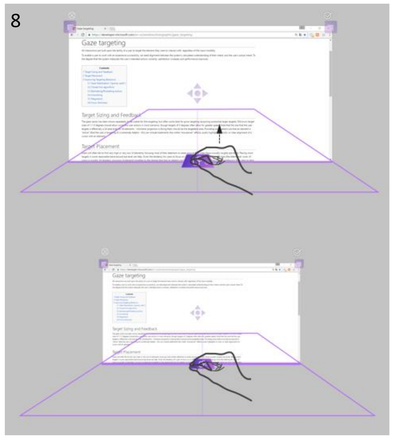


Figure 6: Buttons for windows adjustment
Figure 7: The controls for adjusting the windows size
Figure 8: The controls for adjusting the near and far of the window in 3D space

Conclusion

- This new design is dedicated to an efficient way to navigate the content of an application.
- Moreover, the visual guides allow the user to adjust the window easily and precisely. When the number of windows increases, the link-link button can be used to gather related windows quickly.
- More importantly, unlike using back and forward to navigate the content, our design employs an at the structure to organize information more efficiently.
- This kind of layout can extend more new form, present the trend od border-less design and no hierarchical interface.