

Control Menu based Spatial Awareness

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Abstract Today, people's life cannot leave the electric equipments, such as mobile phone, iPad and other equipments that need people to control. There have been so much inputs, such as mouses, styluses and figures. Traditional ways of interaction mainly provide x-y position to allow users to control the menu, but they provide z position rarely. Most of inputs are based on touch screens on the equipment or buttons on the control table. The spatial awareness has been always ignored. We will discuss a new different input way based on the spatial awareness. We divide the space in front of users into some small cube space (SCS). People can click the shortcut key on the control menu by selecting the specific SCS in the front of them using their hands, with full or partial visual feedback. In this paper, we design the experiment to investigate human's ability to select a SCS exactly using this sense. And the experiment also considers two selection methods to let users confirm their selection once the SCS acquired by their hand, we also give some questionnaires to participants to collect user feedback information.

Keywords

Perception of space Control menus Human computer interaction

1 Introduction

Traditional HCI has been designed to two degree-of-freedom mapping the x-y position that mouse, stylus or figure always provide. In addition to these inputs, there also have rockers and wheels provide x-y position similarly. So much papers discuss these inputs and provide much improvement programs based on these inputs. These inputs have been widespread used in our daily life. But in some situations, no matter how to improve these inputs, they have limitations, for example, when you use AR device, it's very inconvenient to use traditional inputs, especially to use immersing AR device which user can hardly get the outside information but easily get the space information. Especially with the virtual visual feedback in the AR device, this Menu Control Function can perform better. And in the field of large screen control, using human's spatial awareness can assist the visual impairment people to make control the device easily, like large screen.

If we want to use the human spatial awareness to make menu control like click the shortcut key by selecting SCS, we should know how much can human know about the space around themselves. In this paper, we design an experiment to investigate users' spatial awareness. Questions that need to be answered include: how much discrete layers the space in front of user can be divided into SCS in vertical and horizontal directions, what mechanisms can be used to confirm the users' selection, and what is the impact of visual feedback, how much difference between right-handed and left-handed when they are supposed to select a SCS.

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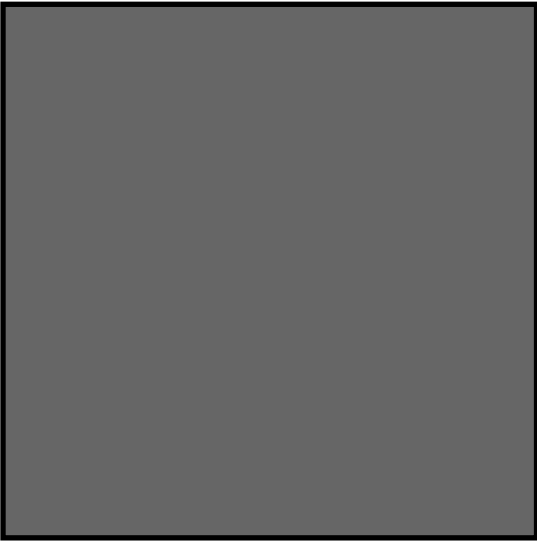


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First of all,we review some relevant reserachers' works.Then we'll present our experiment to invest humans' ability to select the the specific SCS in the front of them using their hands, with full or partial visual feedback.Our experiment also conside different techniques for confirming users' selection once the SCS is acquired.

2 Preview Work

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2.1 Subsection title

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Paragraph headings Use paragraph headings as needed.

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References

1. Gonzalo Ramos,*et al.* Pressure Widgets, *ACM CHI 2004*, Volume 6, Number 1 (2004)
2. Author, Book title, page numbers. Publisher, place (year)

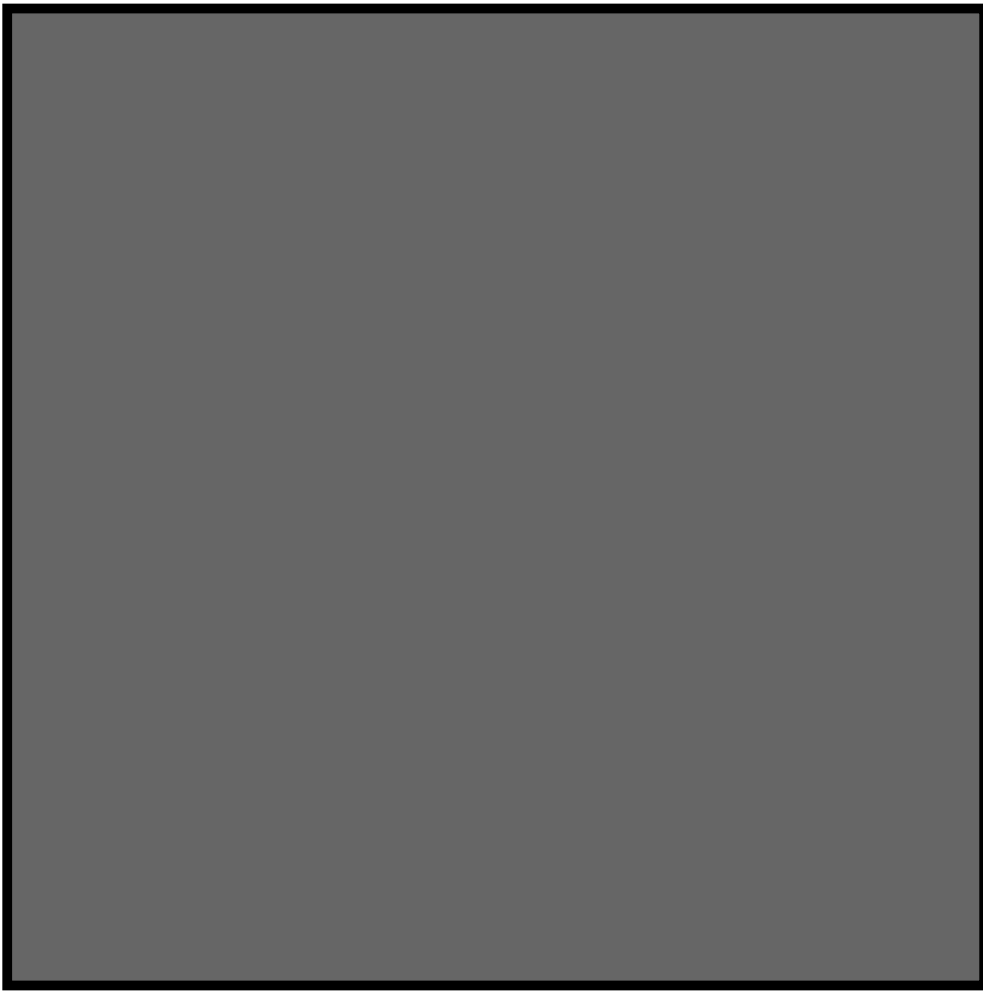


Fig. 2 Please write your figure caption here