

What You Look at Is What You Control: A Universal Remote Control Based on Gaze Measurement Technology

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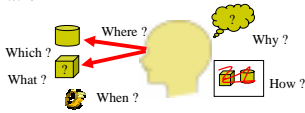
Outline

- Motivation
- Approach
- Applications using attention-related information
 - Keyboard / Mouse switch system
 - Home appliance switching system
- Summary

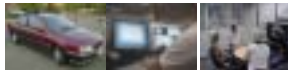
Motivation

□ Attention-related information

- Where is the focus of attention?
- Which object did he/she look at?
- What did he/she look at?
- Why does he/she look at this?
- When did he/she look at that?
- How does he/she always look at this?



- I believe that attention information is useful for applications such as *Human-Interface*, *Driver Monitoring*, *Computer Mediated Communication*, *Computer Supported Collaborative Works*, and *Robot Interaction*.

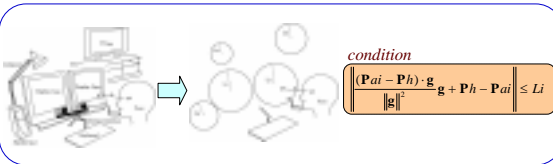


Key technology

□ Face-tracking system



Approach: Selection of target appliance



Results of Target selection



Application

1. Keyboard/Mouse switch system

Keyboard and mouse jungle



- It is inconvenient that there are many similar human interface on a desk.
- It is very confusing to distinguish which input device belongs to which computer.



System configuration of my proposed system



Application

1. Keyboard/Mouse switch system

- Demonstration video



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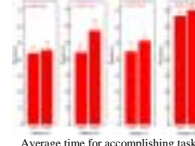
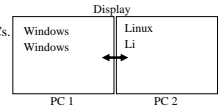
Application

1. Keyboard/Mouse switch system

- Evaluation experiment

- The effectiveness of the developed gaze-based switch was evaluated compared with conventional mouse-based switch.

Ten words are alternately typed in each text editor of two PCs.
task1 : switch by gaze (my system)
task2 : switch by mouse movement into the other screen



Average time for accomplishing tasks

task1 < task 2
Switching PC by Gaze is faster !

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Application

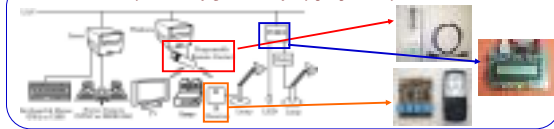
2. Home appliance switching system

Remote controller jungle



- It is not unusual to have many remote controls in our room and to have troubles finding the right one to control.

System configuration of my proposed system



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Application

2. Home appliance switching system

- Demonstration video



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Summary

- A method of recognizing a fixated object which user is looking at was developed
- Following two applications were proposed:
 - the keyboard/mouse switching system
 - the home appliance switching system
- The feasibility of the implemented systems was confirmed through experiments.

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Thank you for your attention