Assignment 1

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Wireless Face Interface: Using voluntary gaze direction and facial muscle activations for humancomputer interaction

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Introduction

Fig. 1. Left: the wireless Face Interface prototype. Right: a person wearing the prototype.

- whats the main aim of this article?
- what is the face interface device?
- how does it work¿

Motivation and Context

- continuing the earlier researches and studies in the field .
- To test and evaluate the different methods selecting .
- The benefits of such device .

Research Questions

- To find which one is better between the two selection technique (frowning or the raising eyebrows)?
- How the device will preform on a wider variety of tasks?

Critical Literature Review

- Earlier studies of Surakka 2004,2005
  - Used remote eye tracker and EMG amplifier
- Chin et al. (2008)
  - Used the facial EMG to correct the inaccuracy of the eye tracker
- Fitts law
  - difficulty of a pointing task (ID)
  - the movement time (MT)
  - index of performance (IP)
- Subjective ratings
  - Used to rate the participants experience

Research Method and Results

- 20 voluntary participants
- range 1943 years
- All participants had normal vision
- Samsung SyncMaster 24" widescreen
- viewing distance of 60 cm
- Windows XP operating system

Research Method and Results

- home square and a target circle on the screen
- select the home square first, then the target circle
- A pause of 2000 ms
- The width of the home square = 30mm

Research Method and Results

- the participants were introduced to the equipment
- practice before the actual experiment = 5 min.
- short relaxation period
- The scale varied from -4 to +4

Research Method and Results

- Mixed-model analyses of variance(ANOVA)
- Bonferroni corrected *t*-tests to detect the target circle clicking error
- 40 mm diameter, faster
- The raising technique, faster pointing task times
- frownig technique, higher mean error rate
- Fitts' law was performed on, distances from 60 mm to 260 mm

Conclusion

We Conclude that:

- the wireless face interface device is that use the gaze direction to point and the facial muscle movement (Frowning or Rising eyebrows) to select objects on the PC screen .
- Differences between frowning and rising the eyebrows .
- Whats the improvements and differences between the device and the earlier devices.
- The device's potentials in the future .

Questions And Answers