Analysis of Key Typing Process using Hand Position process.

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abstract
This research is analysis about key typing process using multi point measure data. These research for learning system about key typing. We measure hand motion during key typing. and We can simulate about hand motion using Key typed data and connection about key with finger. In this paper propose about these experiment and analysis.

Keyword:Skill Learning process,Key Typing process,Touch Type,Hand Motion.

1: Introduction
Any general computer has Keyboard and Mouse. So The novice about computer need grasp any skill for computer operation. Key typing is one of the computer operation skill. Key typing skill is that the connection about the key with the finger or hand for typing.(and touch type).
Any touch type learning system and software are exist. These system muching displayed text with typed key. So There is not Display text with using finger and typed key. The most important skill about key typing is the connection about the Display text with using finger and typed key. so Any learner learn more and more key typing process. but there is not right connection about the typing key with working finger.
Any research is exist about Key Typing process.[1][2][3][4][5] and we research about the touch typing process using Eye Motion and typed key information. These research is for STM/LTM(Short Term Memory or Long Term Memory) and Skill identification about touch typing. And 2) is hand motion about key typing process. These research good work for hand motion during key typing. but that research is using Video Camera and Graphics Cognition. so Measure hand motion is about 30Hz.
In this paper, We propose experiment and analysis way about Ill hand motion for key typing. We use 3D measure device(Polhemus 3space Fastrak). and Hand simulation model using Display Text(Task) and Key layout.

2: Keyboard and key typing
Keyboard has any type. Most popular keyboard type is the QWERTY(Fig1) layout keyboard and Alphabetic layout keyboard. These key layout by type-writer. These keyboard has any key. These key allocate one key for one alphabet(Only alphabet)(Fig2). These keyboard define home position and connection about the key with touch finger. This define is for the first and easy typing. So anytime, Any novice for touch type are learn these key typing skill about connection the key with the working finger.

Fig 1.QWERTY-type Keyboard

Fig 2.Correlation with key layout with finger
3: 3D Position Measure device

We use 3D position measure device is Polhemus 3space Fastrak. This device can measure 3D position and angle using magnetic field about 30Hz~120Hz. This device has 3 parts. Measure Body, Sensor, and Source. The Source is Magnetic field generator, and Sensor has 3 coil. So The sensor can measure the sensor's position.

We development the measure and text inputting environment. This environment called Key Typing Environment (KTE). KTE can measure 3D position about hand motion about 60Hz on one Computer. (Fig3) But we want to measure the more first measure frequency. So Now we construct more first measure environment.

4: Analysis way.

We can measure hand position. We must simulate the hand motion during key typing. We can grasp parameter about key typing is that, Inputted Key, Display Text (Task for Testee) and there is defined the Key layout and Typing finger about one key. We simulate the process about the right hand motion during key typing for Display Text. And We compair the Hand motion by measure data with Simulated Hand motion. These data say that the woring part and good part about the Hand motion. (Fig4)

5: Conclusion

In this paper, We propose the analysis way and measure environment for that the grasp the woring part during key typing using Measure device. This paper is only propose, so Next time we must measure and report the experiment result.

And These experiment way is only hand position. We must measure the finger motion using Data Glove. The Typing process using Data Glove has any problem. Glove has little thickness. These thickness give any effect to testee. but this is most important problem. That the finger motion during key typing. so We will reseach the correlation about finger motion with hand motion during key typing process.

This reseach is for grasp the Hand motion process. These purpose is assist about any problem to testee about hand or finger motion. We think that these approach is very important for construct the Learning or Teaching System.

References