

Multimedia Systems Laboratory



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Summary of Achievement

Refereed Journal Papers

Refereed Proceeding Papers

- [jpshin-18:2012] Jungpil Shin and Makoto Marumoto. Ink Diffusion Simulation for 3D Virtual Calligraphy. In *IEEE 4th International Conference on Awareness Science and Technology (IEEE iCAST 2012)*, pages 163–168, Seoul, Korea, Aug 2012. IEEE, IEEE.

The calligraphy is one of traditional culture in Japan. In the calligraphy, writers express their feeling by using various shapes of strokes and various effects such as scratchiness and ink diffusion phenomenon. Therefore, scratchiness and ink diffusion phenomenon are crucial features in calligraphy. The purpose of this paper is realization of ink diffusion phenomenon which is one of the important features in 3D Virtual Calligraphy Simulation. Ink diffusion phenomenon is influenced by various factors such as the conditions of the ink, paper, and brush. In this paper, the extent of ink diffusion phenomenon and ink color are considered on density of ink and quantity of water. Cased by these factors, to express ink diffusion phenomenon in 3D Virtual Calligraphy Simulation in real time, new drop model was used. Ink diffusion phenomenon occurs when ink is diffused circularly. Using this principle, created a drop model and realized ink diffusion phenomenon. By this method, a feathery, blurred edge that is characteristic of ink diffusion phenomenon is also able to be expressed.

- [jpshin-19:2012] Weichen Lin and Jungpil Shin. Evaluation of On-Line Signature Using Shape Feature. In *IEEE 4th International Conference on Awareness Science and Technology (IEEE iCAST 2012)*, pages 117–121, Seoul, Korea, Aug 2012. IEEE, IEEE.

Signature evaluation is a method to determine individual signature whether that is good or bad. A good signature is more complex and difficult to impersonate, besides a bad signature are easy to recognition and easy to impersonate. If a signature have a lot of angle, that is means the signature is more complex, so we calculate the internal angle quantity to determine that is a good or bad signature. There are too many angle in a signature, contain big angle or small angle. In this paper, we using geometry to decide what kind of angle that we want to determine.

- [jpshin-20:2012] Jungpil Shin Kotomi Ishida. Educational Effect of Kanji Learning System. In Albert Y. ZOMAYA, editor, *The 2012 IEEE Asia-Pacific*

Services Computing Conference, pages 211–216, Guilin, China, Dec 2012. IEEE, IEEE.

The result of the research of the educational effect of Kanji (Chinese character) learning system is described in this thesis. Kanji learning system was made so that the grade-schooler and the foreigner in the living in Japan may study kanji joyfully and efficiently. An existing system is composed of the client Application program and the Server Application program. The client application program has function to grade characteristics of Kanji, “Tome”, “Hane”, “Harai” and more. However, this system didn’t use for actual study of Kanji. Therefore, two experiments were conducted on college students to verify educational effect of this. In this time, educational effect was defined the change of percentage of correct answers. Also, it was considered as learning time and the number of times writing Kanji in once learning time. The purpose of the first experiment in this research is measurement educational effect to learn stroke order of Kanji. Second experiment’s purpose is comparison educational effect between learning process of this system and usual learning process writing Kanji on paper. From these experiments, it seems Kanji learning system is given large educational effort about the stroke order of Kanji to students. On the other hand, it seems that the effect of memorized of Kanji given from Kanji learning system is small. However, looking at the results of these comprehensive, it seems that Kanji learning system can be given more educational effect than the usual learning process to write Kanji many times.

[jpshin-21:2012] Jungpil Shin and Weichen Lin. Shape Feature Extraction for On-line Signature Evaluation. In Petre Dini, editor, *The Fifth International Conference on Information, Process, and Knowledge Management (eKNOW-2013)*, pages 20–25, Nice, France, Feb 2013. IARIA, IARIA.

In this past few years, due to development of banks and companies aim to move security from simple static passwords to more dynamic security measure to suit the comfort level of the user in mobile-commerce and webcommerce. The most personal way for authentication is signing. By providing the signature, an identity-conclusion function is observed. Signature evaluation is a method to determine individual signature whether that is good or bad. A good signature is more complex and difficult to impersonate, besides a bad signature are easy to recognition and easy to impersonate. If a signature have a lot of angle, that is means the signature is more complex, so we calculate the internal angle quantity to determine that is a good or bad signature. There are too many angle in a signature, contain big angle or small angle. In this paper, we using geometry to decide what kind of

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angle that we want to determine. After the evaluation system judge also use the verification system to analysis the EER rate, as the paper of system we use the neighbor to get the best system.

[jpshin-22:2012] Jungpil Shin and Tomomi Kikuchi. On-Line Signature Evaluation Using Fuzzy Set Theory. In Fatos Xhafa, editor, *The 26th IEEE International Conference on Advanced Information Networking and Applications (AINA-2013)*, pages 273–277, Barcelona, Spain, Mar 2013. IEEE, IEEE.

In this paper we propose a novel algorithm for a signature evaluation system using fuzzy set theory. It is possible to obtain an intermediate value of a natural language expression by using fuzzy set theory that allows a state in the middle. Accordingly, it becomes possible to realize an algorithm such that an ambiguity is able to be judged valid or not. The quality of signature verification reference will be able to be improved. It makes the risk of on-line signature verification less.

Grants

[jpshin-23:2012] Jungpil Shin. Laser based Intelligent Input Device for Interactive Screen, May 2012.

Co-project with Seoul University in Korea and the Univ. of AIZU

Academic Activities

[jpshin-24:2012] Jungpil Shin, Aug 2012.

Member of the Program Committee, (held in Seoul, Korea, Aug. 21-24, 2012)

[jpshin-25:2012] Jungpil Shin, Apr 2012.

Editor (held in Seoul, Korea, Apr. 24-26, 2012.)

[jpshin-26:2012] Jungpil Shin, Aug 2012.

Program Chair (held in National Univ. of Mongolia, Mongolia, Aug 8 -10, 2012)

[jpshin-27:2012] Jungpil Shin, March 2013.

Program Committee, (held in Orlando, Florida, USA, on March 19 - 22, 2013)

[jpshin-28:2012] Jungpil Shin, Dec 2012.

Editorial Committee (held in Kangwondo, Korea, Dec 16-19, 2012)

[naru-05:2012] N. Hirata, 2012.

Member, and member of the committee for general affairs

[naru-06:2012] N. Hirata, 2012.

Member of Program Subcommittee

Ph.D and Others Theses

[jpshin-29:2012] Watanabe Shingo. Graduation Thesis: Recognition of Character Drawn on Screen With Laser Pointer, University of Aizu, 2012.

Thesis Advisor: Jungpil Shin

[jpshin-30:2012] Okuyama Toshiki. Graduation Thesis: Realization of Sensory Calligraphy Learning System with On-line Handwriting Character, University of Aizu, 2012.

Thesis Advisor: Jungpil Shin

[jpshin-31:2012] Nakamura Takayuki. Graduation Thesis: Investigation of Educational Effect of Schoolchild Using the Kanji Learning System, University of Aizu, 2012.

Thesis Advisor: Jungpil Shin

[jpshin-32:2012] Liu Zhaofeng. Graduation Thesis: Writer identification using on-line 6 dimension data of Chinese characters, University of Aizu, 2012.

Thesis Advisor: Jungpil Shin

[jpshin-33:2012] Murata Tomoya. Graduation Thesis: Hand Gesture and Number Recognition with Kinect Sensor, University of Aizu, 2012.

Thesis Advisor: Jungpil Shin