Noble Model of Detecting Facial Parts Using Optimization techniques

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Abstract*: Face recognition is one of the most popular applications for automatically identifying or verifying a person. It requires high-performance image processing systems and therefore, the implementation of processing algorithms in hardware emerges as a good viable solution. Reconfigurable devices, as field programmable gate array, and system level hardware programming languages (HDL) have further accelerated the design of image processing in hardware. In this work, an algorithm for eye and mouth detection in face detection is implemented using Simulink (Math Works). This algorithm included three stages: image capture and pre-processing, face detection and eyes and mouth and nose detection. Eyes ,nose and mouth were mapped and detected considering different characteristics of chrominance and luminance of the eyes, mouth and skin. The purpose of creating an algorithm in Simulink is the posterior use of the software tool, the DSP Builder (Altera), which allows generating digital signal processing algorithms in HDL, directly from the Simulink environment. As results, the proposed Simulink algorithm was able to detect the eyes, nose and the mouth in human face images. However, factors as lighting, distance and focus, act as noise sources, affecting the algorithm performance and false regions also were detected. Iris recognition is an automated method of biometric identification that uses mathematical pattern-recognition techniques on video images of one or both of the irises of an individual's eyes, whose complex patterns are unique, stable, and can be seen from some distance. This iris scanner detects the pupil in the image of eyes using Simulink.*

Keywords: chrominance, Iris, Simulink, luminance, Biometric

REFERENCES

[1]. D. Bhattacharyya, R. Ranjan, F. Alisherov, and M. Choi, "Biometric authentication: a review," International Journal of u- and e- Service, Science and Technology, vol. 2, pp. 13-28, 2009.

[2]. R. Jafri, and H. Arabnia, "A survey of face recognition techniques," Journal of Information Processing Systems, vol. 5, pp. 41-68, 2009.

[3]. Hardware Description Languages,Sarah L. Harris, David Money Harris, in Digital Design and Computer Architecture, 2016

[4]. Altera Corporation, "DSP Builder Handbook," San Jose: Altera, vol. 2, 2013.

[5]. M. A. González, P. N. Posso, E. Sarria, J. C. Cruz, J. F. Valencia"Algorithm for eyes and mouth detection in face recognition using Simulink"

[6]. D. V. Rao, S. Patil, N. A. Babu, and V. Muthukumar, "Implementation and evaluation of image processing algorithms on reconfigurable architecture using C-based hardware descriptive languages," International Journal of Theoretical and Applied Computer Sciences, vol. 1, pp. 9-34, 2006.

[7]. R. Waxman, and M. Israel, "Hardware description languages," Encyclopedia of Computer Science, pp. 768-773, 2003.

[8]. Amir, L. Zimet, A. Sangiovanni-Vincentelli, and S. Kao, "An embedded system for an eye-detection sensor," Computer Vision and Image Understanding, vol. 98, pp. 104-123, 2005.

[9]. J. Kovac, P. Peer, and F. Solina, "Human skin colour clustering for face detection," EUROCON 2003. Computer as a Tool. The IEEE Region 8, vol.2, pp. 144-148, September 2003.

[10]. C. Harshith, S. Karthik, R. Manoj, S. M.V.V.N.S, and L. Naveen, "Survey on various gesture recognition techniques for interfacing machines based on ambient intelligence," International Journal of Computer Science & Engineering Survey (IJCSES), vol. 1, pp. 31-42, 2010.

[11]. H. Rahman, and J. Afrin, "Human face detection in color images with complex background using triangular approach," Global Journal of Computer Science and Technology, vol. 13, pp. 45-5

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