Chapter 3 Approaches for M-Health Environment

ABSTRACT

It is a well-known fact that when a camera or other imaging system captures an image, often, the vision system for which it is captured cannot implement it directly. There may be several reasons behind this fact such as there can exist random intensity variation in the image. There can also be illumination variation in the image or poor contrast. These drawbacks must be tackled at the primitive stages for optimum vision processing. This chapter will discuss different filtering approaches for this purpose. The chapter begins with the Gaussian filter, followed by a brief review of different often used approaches. Moreover, this chapter will also render different filtering approaches including their hardware architectures.

GAUSSIAN FILTER

The use of the Difference of Gaussian (DoG) or Gaussian Filter has widely been used for varying purposes. In this approach, the moving window technique is often implemented for the local neighborhood window. In figure 1, the design of hardware architecture has been delineated for a 3x3 moving window. The following are the important steps of this technique.

DOI: 10.4018/978-1-7998-4537-9.ch003

Approaches for M-Health Environment

Step 1. Gaussian filter or median filterStep 2. BufferStep 3. Local neighborhood windowStep 4. Image processing technique

In this technique, the image pixels are given as input, and subsequently, it is processed using a Gaussian filter or median filter. Another suitable technique can also be used for this purpose. Further, buffers are used for shifting the image pixels within the correct local neighborhood window. After encapsulating the genuine pixels by the local neighborhood window, image processing techniques can be used for producing the output.

Figure 1. Hardware architecture of a 3x3 moving window



An extensive literature survey reveals the fact that different researchers have widely used this approach. In (Rao et al., 2006), a moving window is used along with a Gaussian filter in the hardware architecture. Moreover, the architecture is given in (Rao et al., 2006) also utilizes a controller that controls the flow of data from and to the buffers. In addition, a multiport block RAM is also used to implement the circular buffering. Further, in (Zhang et al., 2007), the multi-window partial buffering scheme is used for two-dimensional convolution techniques on FPGA. In this technique, parallel processing of

33 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: <u>www.igi-</u> <u>global.com/chapter/approaches-for-m-health-</u> <u>environment/256051</u>

Related Content

Proactive Mobile Fog Computing using Work Stealing: Data Processing at the Edge

Sander Soo, Chii Chang, Seng W. Lokeand Satish Narayana Srirama (2017). International Journal of Mobile Computing and Multimedia Communications (pp. 1-19).

www.irma-international.org/article/proactive-mobile-fog-computing-using-work-stealing/193257

Web Algorithms for Information Retrieval: A Performance Comparative Study

Bouchra Frikhand Brahim Ouhbi (2014). International Journal of Mobile Computing and Multimedia Communications (pp. 1-16).

www.irma-international.org/article/web-algorithms-for-information-retrieval/113770

Wearables and People with Disabilities: Socio-Cultural and Vocational Implications

Damara Goff Parisand Katrina R. Miller (2016). *Wearable Technology and Mobile Innovations for Next-Generation Education (pp. 167-183).* www.irma-international.org/chapter/wearables-and-people-with-disabilities/149607

Improving Throughput of Starved TCP Flow by Sidestepping Bottleneck Nodes Using Concurrent Transmission

Rajesh Verma, Arun Prakash, Rajeev Tripathiand Neeraj Tyagi (2012). Advancing the Next-Generation of Mobile Computing: Emerging Technologies (pp. 47-60). www.irma-international.org/chapter/improving-throughput-starved-tcp-flow/62964

Going 11 with Laptop Computers in an Independent, Co-Educational Middle and High School

Natalie B. Milman, Marilyn Hillarious, Vince O'Neilland Bryce Walker (2013). Pedagogical Applications and Social Effects of Mobile Technology Integration (pp. 156-174).

www.irma-international.org/chapter/going-laptop-computers-independent-educational/74910