

Biometric Watch™

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Editor's note: HTML subscribers will notice that, beginning with this issue of Biometric Watch, all graphics are stored on line at our website. This reduces the overall file size being sent to you each month. The larger file sizes have caused problems for a few BW subscribers in the past. In order to view the graphics in this issue, you must have an active Internet connection as you view the issue. Allow a few seconds for the graphics to load. If you notice blank "boxes", check to make sure your Internet connection is live. This change has allowed us to increase the content of BW without overloading your email inbox. We are interested in your comments and hope the ability to add additional graphics illustrating our reports will add to the value of your BW subscription.

New 3D Single Chip Camera

Biometric developers may soon benefit from new machine vision technology that utilizes real-time 3-D imaging. Canesta, a San Jose California company, is the inventor of a low-cost electronic perception technology, dubbed Equinox, that enables machines and ordinary electronic devices to perceive and react to nearby objects or individuals in real time. The single-chip Equinox 3-D "camera" has a USB interface that allows connection to standard PC's and has a Windows-based software development environment. The fundamental basics of the technology involve distance and timing, not at all unlike a radar system using light reflection rather than radio waves. The light illuminating each individual pixel in an image sensor comes from a different feature in the scene being viewed. Canesta recognized that if they could determine the amount of time that light takes to reach each pixel, they then could calculate with certainty the exact distance to that feature. Their web site aptly describes it as developing a three-dimensional relief map of the surfaces in the scene. "In three dimensions, objects previously indistinguishable from the background, for example, metaphorically pop out. For a broad class of applications, this may prove extremely helpful in reducing the mathematical and physical complexity that has plagued computer vision applications from the start".



Canesta indicates that the chips are not fooled by ambient light conditions, either. The technology measures the time duration it takes the pulse to reflect back to each pixel, using high speed, on-chip timers in one method, or simply count the number of returning photons, an indirect measure of the distance, in another.

In either case, the result is an array of "distances" updated as often as 50 times per second that provides a mathematically accurate, dynamic "relief" map of the surfaces being imaged. The image and distance information is then handed off to an on-chip processor running Canesta's proprietary imaging software that further refines the 3-D representation before sending it off chip to the OEM application.

"The technology measures the time duration it takes the pulse to reflect back to each pixel"

With Canesta's technology, their sensors make possible real time applications such as projection keyboards and automotive sensors that can judge accurately the size, shape and position of the passenger for both safety, convenience and security. For facial recognition security systems it's potentially a new way to recognize people using a three dimensional view of their face. The list goes on.

Canesta was founded in April 1999, and is located in San Jose, CA. The company has filed in excess of forty patents, 12 of which have been granted to date.

<http://www.canesta.com/>