

Image Quality for Healthcare Applications

Telemedicine is rapidly becoming an essential component of today's chronic disease management programs and clinical care practice.

Overview

Whether remotely monitoring a diabetes patient's blood glucose levels or interactive, real-time provider-provider consultation, high-quality information display is critical.

Viewing angle, ambient condition of the room, accurate color rendering, 3-D registration, and quality of camera image capture, monitor size and sharpness – all can have a tremendous impact on diagnosis and clinical decision making.



Industry Need Addressed

Research activities focus on defining improved methods for acquiring and displaying images for telemedicine applications. For example, 3-D imaging creates a lot of nausea, fatigue, and other symptoms when viewed for long periods of time, depending on the quality of the image and display. Standards that can help characterize these displays will be required to help minimize potential mistakes caused by unwanted effects.

NIST Approach

NIST research is currently evaluating mobile displays (tablet PCs, smart phones, etc.), commercial-off-the-shelf cameras, televisions/monitors, and display calibrations systems for telemedicine use. Through the research program, NIST also will eventually help develop standards for hyper-dimensional displays (nD displays) – displays that can present images in 3-D and overlay multiple images acquired through different modalities. These types of displays have great promise for medical applications including telesurgery (for example, directing medical procedures from ship to shore).

NIST will develop measurement techniques and procedures for characterizing displays for such parameters as:

- Optimum viewing distance.
- Horizontal/vertical disparity.
- Interocular difference in trapezoidal distortion.
- Rotational misalignment.

Impact

These measurement procedures will allow researchers and manufacturers to develop product specifications that can be related to human performance, and allow users to determine the best product and technology for their application.

For additional information, please visit <http://www.nist.gov/healthcare/emerging/imagequality.cfm>

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