

Wireless Tablet Application for Remote Collaboration and Training in Colonoscopy

Summary

Colorectal cancer is the fourth leading cause of cancer-related mortality in the world. During patient screenings for populations at risk, polyp detection rates depend on the endoscopist's ability to identify the lesions, which takes years of practice and training. Endoscopic training can be challenging for the trainee and preceptor. Frustration can result from ineffective communication regarding areas of interest. Our team developed a novel tablet application for real-time mirroring of the colonoscopy examination that allows preceptors to make annotations directly on the viewing monitor that facilitates medical training and enables collaboration among several endoscopists during a procedure.

Applications

TRAINING:

- Facilitation of hands-on training, by enabling experienced physicians to more effectively highlight lesions and polyps using the endoscopic video.
- Instead of verbally stating where a polyp may lie or a region of interest the student should observe, the attending physician is able to draw on-screen areas in which the trainee should concentrate their attention.

COLLABORATION:

- Annotation and manipulation of any video stream that would benefit from having multiple collaborators concurrently viewing it
- Software enables the collaboration between multiple doctors, who would be able to remotely view and offer expertise on a particular patient.

Technology Description

Tablet software application allows a secure video stream to be broadcast to remote users, who are able to receive the stream via an application running on a handheld tablet. Software uses a secure central computer server hub to acquire images from the endoscopic column and display them on a secondary monitor. The server runs an application that allows validated remote tablet users to annotate the camera images on the secondary monitor. These remote users are able to perform manipulations on the video screen at the initiating location, including: annotating the image (i.e., adding highlights, shapes, etc. to the video stream), pausing/resuming the video stream and erasing the annotations.

Technology Development Status

- Using a medical colonoscopy training simulator, Ten colonoscopies were performed with 15 arbitrarily placed artificial polyps to test the validity of the software. Usage of the tablet application with an additional observer resulted in increase in the polyp detection rate
- Publication: Evaluation of a novel tablet application for improvement in colonoscopy training and mentoring Laborde et al., [Gastrointestinal Endoscopy](#) July 2016
- Vanderbilt seeks a commercial partner for transitioning this technology from the lab to the marketplace

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